

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE J		PAGE OF PAGES 1 3	
2. AMENDMENT/MODIFICATION NO. 0010		3. EFFECTIVE DATE 13-Jun-2003		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO.(If applicable) 0250570	
6. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT P.O. BOX 3755 SEATTLE WA 98124-3755		CODE DACA67		7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				<input checked="" type="checkbox"/> X		9A. AMENDMENT OF SOLICITATION NO. DACA67-03-R-0210	
				<input checked="" type="checkbox"/> X		9B. DATED (SEE ITEM 11) 22-Apr-2003	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> X The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input checked="" type="checkbox"/> X is extended, <input type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>0</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) <div style="text-align: center;">BATTLE SIMULATION CENTER, FORT LEWIS, WA - SEE CONTINUATION</div>							
<small>Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.</small>							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: EMAIL:			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
_____ (Signature of person authorized to sign)				BY _____ (Signature of Contracting Officer)		13-Jun-2003	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

. This amendment provides for the following revisions to the solicitation:

1. Standard Form 1442 Front and Back are provided to be used in submitting final proposal revisions.
2. Pricing Schedule is provided to be used in submitting final proposal revisions.
3. Section 00800, Special Clauses – Construction, is revised to indicate a revision to Drawing Sheet 23, Plate No. C-105, Site Paving and Fencing, and to provide revision by notation to Drawing Sheet 19, Plate C-101, Site Layout Plan.
4. General Wage Decisions WA020001 and WA020002 are replaced by new General Wage Decisions WA030001 and WA030002.
5. Technical Specification Section 01270, Payment: The descriptions for Items No. 0010, 0013, 0014, and 0015 have been revised.
6. Section 01501, Construction Facilities and Temporary Controls, para. 1.1: The title has been revised to read “Availability and Use of Utility Services,” and the text of the paragraph has been revised.
7. Section 01572, Construction and Demolition Waste Management: para. 1.7, Project Waste Management Requirement, has been revised to show at least 75% (by weight) of the generated construction, demolition and land clearing waste.
8. Section 01830, Facility Maintenance Program: Para. 3, Facilities Management System (FMS), subpara. 3.1, Software and Hardware Requirements, sub-subpara. 3.1.1, 3.1.2, 3.1.4, 3.1.5 and 3.1.6 have been revised.
9. Section 02821, Fencing: New para. 3.12, Additional Fencing Material and Installation, has been added.
10. Section 03100, Formwork for Concrete: Para. 1.1, References, para. 1.3, Submittals, and subpara. 2.1.1, Forms and Form Liners, have been revised.
11. Section 06100, Rough Carpentry: Para. 1.2, Submittals, has been revised.
12. Section 06200, Finish Carpentry: Para. 1.2, Submittals, has been revised.
13. Section 06410, Laminate and Veneer Clad Architectural Casework: Para. 1.3, Submittals, has been revised.
14. Section 08210, Wood Doors: Para. 1.2, Submittals, has been revised.
15. Section 08520, Aluminum and Environmental Control Aluminum Windows:
16. Section 09840, Acoustical Wall and Ceiling Treatment: Para. 1.1, References, para. 1.2, Submittals, and para. 2.2, Wood Faced Acoustic Wall and Ceiling Panels, have been revised.
17. Section 12705, Furniture Systems: Para. 1.3, Submittals, has been revised:
18. Section 15895, Air Supply, Distribution, Ventilation and Exhaust System: New para. 3.7.2, Air Handler Heat Recovery, is added.
19. Section 16264, Diesel-Generator Set, Stationary 15-300 KW, Stationary Applications: Para. 1.1, Bid Form Information, is revised.

B. The revised attached pages supersede pages of the same number and should be inserted in numerical sequence. All changes are generally identified, for your convenience, either by strikeout for deletions, and underlining of text for additions or single dark line in the margin. All portions of the revised or new pages shall apply to this contract whether or not changes have been indicated.

C. The time and date for receipt of proposals are extended to 2:00 p.m., local time, 23 June 2003.

D. Offerors must acknowledge receipt of this amendment by number and date on the Standard Form 1442 BACK (page 00010-2) in Block 19 or by telegram.

Enclosures:

Rev. SF1442 Front and Back

Rev. Pricing Schedule

Rev. 00800

New General Wage Decisions WA030001 and WA030002

Rev. 01270

Rev. 01501

Rev. 01572

Rev. 01830

Rev. 02821

Rev. 03100

Rev. 06100

Rev. 06200

Rev. 06410

Rev. 08210

Rev. 09840


Rev. 12705

Rev. 15895

Rev. 16264

Rev. drawing sheet 23

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SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>		1. SOLICITATION NUMBER DACA67-03-R-0210	2. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 22 April 2003	PAGE OF PAGES 1
IMPORTANT - The "offer" section on the reverse must be fully completed by the offeror.					
4. CONTRACT NUMBER		5. REQUISITION/PURCHASE REQUEST NUMBER W68MD9-3027-6329		6. PROJECT NUMBER	
7. ISSUED BY Seattle District, Corps of Engineers ATTN: CENWS-CT-CB-MU PO Box 3755 Seattle, WA 98124-3755		CODE W68MD9		8. ADDRESS OFFER TO Seattle District, Corps of Engineers PO Box 3755 ATTN: CENWS-CT-CB-MU - Mitton Seattle, WA 98124-3755 HAND CARRY: Seattle District Corps of Engineers Contracting Division 4735 East Marginal Way South Seattle, WA 98134-2329	
9. FOR INFORMATION CALL 		A. NAME See Information Page inside Front Cover		B. TELEPHONE NUMBER (Include area code) (NO COLLECT CALLS) See Information Page inside Front Cover	

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying number, date):

Furnish all labor, materials and equipment and perform all work for Battle Simulation Center, Fort Lewis, WA in accordance with the attached Contract Clauses, Special Clauses, Technical Specifications and Drawings.

NOTE: Award will be made pursuant to the Small Business Competitive Demonstration Program

11. The Contractor shall begin performance within 10 calendar days and complete it within _____ calendar days after receiving

☐ award, ☒ notice to proceed. This performance period is ☒ mandatory, ☐ negotiable. (See Paragraph SC-1, 00800 .)

12A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE PAYMENT BONDS?
 (If "YES," indicate within how many calendar days after award in Item 12B.)

☒ YES ☐ NO

12B. CALENDAR DAYS

10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 2:00 p.m. (hour) local time 03 June 2003 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee ☒ is, ☐ is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 90 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

OFFER (Must be fully completed by offeror)

14. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)

15. TELEPHONE NUMBER (Include area code)

Fax No.:

16. REMITTANCE ADDRESS (Include only if different than Item 14)

Tax ID No:

DUNS No:

eMail:

CODE

FACILITY CODE

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. (Insert any number equal or greater than the minimum requirement stated in 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)

AMOUNTS



See Pages 00010-5 thru 00010-8

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGEMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.

DATE

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)

20B. SIGNATURE

20C. OFFER DATE

AWARD (To be completed by Government)

21. ITEMS ACCEPTED

22. AMOUNT

23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN
(4 copies unless otherwise specified)

ITEM

25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO

☐ 10 U.S.C. 2304(c) ()☐ 41 U.S.C. 253(c) ()

26. ADMINISTERED BY

CODE

27. PAYMENT WILL BE MADE BY

United States Army Corps of Engineers Seattle District
Northwest Area Office
PO Box 92146
Tillicum, WA 98492-0146

US Army Corps of Engineers Finance Center
CEFC-AO-P, 5722 Integrity Drive
Millington, TN 38054-5005

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE☐ 28. NEGOTIATED AGREEMENT (Contractor is required to sign this

document and return _____ copies to the issuing office.) Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this contract.

☐ 29. AWARD. (Contractor is not required to sign this document.) Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN
(Type or print)

31A. NAME OF CONTRACTING OFFICER (Type or print)

30B. SIGNATURE

30C. DATE

31B. UNITED STATES OF AMERICA

31C. AWARD DATE

BY

SCHEDULE

BATTLE SIMULATION CENTER
FORT LEWIS, WASHINGTON
FY03 MCA PN 25057

BASE ITEMS

<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
0001	All Work for Construction of Battle Simulation Center within a line 5 feet outside of the Building Exterior Walls, except for Optional Items 0007 through 0009	1	JOB	L.S.	\$ _____
0002	All Work for Construction of Battle Simulation Center Site Work and Utility Work from a line 5 feet outside of the Building Exterior Walls, except for Optional Items 0010 through 0015	1	JOB	L.S.	\$ _____
0003	All work for As-Built Drawings as Specified in Section 01702, from preparation to final approval, for Base Items and any Optional Items exercised <u>2/</u>	1	JOB	L.S.	\$30,000
0004	All work for O&M Manuals as Specified in Section 01701, from preparation to final approval, for Base Items and any Optional Items exercised <u>2/</u>	1	JOB	L.S.	\$75,000
0005	All work for Form 1354 Checklist and Equipment in Place List as specified in Sections 01704 and 01705, from preparation to final submittal, for Base Items and any Optional Items exercised <u>2/</u>	1	JOB	L.S.	\$15,000
0006	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>First Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Facility Maintenance Program	1	JOB	L.S.	\$ _____

TOTAL BASE ITEMS (0001-0006)

\$ _____

OPTIONAL ITEMS

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
0007	All Work for Construction of OPERABLE PARTITIONS, listed as Doors D122A2, D122B2, D122C2, D122D2, D122E2, D122F2, D122G2 and D122H2, and Subsequent Passage Doors D122A4, D122B3, D122C4, D122D3, D122E4, D122F3, D122G4 and D122H3, identified as an option on the drawings, in lieu of extension of Wall Type 10F into intended openings and door assemblies designated to be D300	1	JOB	L.S.	\$_____
0008	All Work for Construction of the SUSPENDED CATWALK AND ASSOCIATED STAIRS, identified as an option on the drawings, in lieu of extension of adjacent wall types through door locations, as indicated on Plates A-106 and A-107	1	JOB	L.S.	\$_____
0009	All Work for Construction of the ROOF PAVER SYSTEM, identified as an option on the drawings, in lieu of 30" walking matt membrane that is shown dashed and noted on Roof Plan A-109	1	JOB	L.S.	\$_____
0010	All Work for Design and Construction of the Concrete Pad, Pad Mounted EMERGENCE GENERATOR, associated Underground Site Work, Connections and Equipment, as specified 4/	1	JOB	L.S.	\$_____
0011	All Work for Construction of REINFORCED HARDENED DRIVABLE TURF (RHDT), identified as an option on the drawings	1	JOB	L.S.	\$_____
0012	All Work for Construction of the LANDSCAPING AND IRRIGATION, identified as an option on the drawings	1	JOB	L.S.	\$_____
0013	All Work for the Construction of COMMUNICATION DUCTS across the access loop road to the south of the building, identified as an option on the drawings	1	JOB	L.S.	\$_____
0014	All Work for Design and Construction of the Concrete Pad, PAD MOUNTED PROPANE TANK, and associated Underground Piping, Valves and Equipment to establish an alternate fuel source for the project, as specified 4/	1	JOB	L.S.	\$_____
0015	All Work for Design and Construction of a PRE-FABRICATED STEEL STORAGE BUILDING, Concrete Pad and Footings, as specified	1	JOB	L.S.	\$_____

OPTIONAL ITEMS (Continued)					
<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
0016	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Second Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
0017	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Third Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
0018	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Fourth Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
0019	Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the <u>Fifth Year</u> after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance	1	JOB	L.S.	\$ _____
TOTAL CONSTRUCTION (BASE & OPTIONAL ITEMS)					\$ _____
[Items: 0001 through 0005 and 0007 through 0015]					
TOTAL OPERATION & MAINTENANCE (BASE & OPTIONAL ITEMS)					\$ _____
[Items: 0006 and 0016 through 0019]					
TOTAL BASE AND OPTIONAL ITEMS					\$ _____
[Items: 0001 through 0019]					

See Notes on the following page.

NOTES:

1. The offeror shall not revise the dollar amounts established for Items 0003, 0004, and 0005.
2. No partial or total payment will be made for Items 0003, 0004, and 0005, until the as-built drawings, the O&M Manuals, and the 1354 Data/ Installed Equipment List are fully approved (A or B action).
3. Reference Section 01270 PAYMENT for additional descriptive information regarding Schedule Items.
4. Specific information for Items 0010 and 0014 will be provided via amendment.

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SECTION 00800

SPECIAL CLAUSES - CONSTRUCTION

SC-1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) (FAR 52.211-10).

The Contractor will be required to (a) commence work under this Contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) to prosecute the work diligently, and (c) to complete the entire work ready for use no later than 570 calendar days after date of receipt by Contractor of notice to proceed. The time stated for completion shall include final cleanup of the premises.

SC-1.1 OPTION FOR INCREASED QUANTITY

a. The Government may increase the quantity of work awarded by exercising one or more of the Optional Bid Items 0007 through 0015 at any time, or not at all, but no later than 90 calendar days after receipt by Contractor of notice to proceed. Notice to proceed on work Item(s) added by exercise of the option(s) will be given upon execution of consent of surety.

b. The parties hereto further agree that any option herein shall be considered to have been exercised at the time the Government deposits written notification to the Contractor in the mails.

c. The time allowed for completion of any optional items awarded under this contract will be the same as that for the base item(s), and will be measured from the date of receipt of the notice to proceed for the base item(s).

SC-1.2 Exception to Completion Period(s): In case the Contracting Officer determines that completion of seeding, sodding, and planting, and establishment of same is not feasible within the completion period(s) stated above, the Contractor shall accomplish such work in the first planting period following the contract completion period and shall complete such work as specified, unless other planting periods are directed or approved by the Contracting Officer.

SC-2. LIQUIDATED DAMAGES - CONSTRUCTION (SEP 2000) (FAR 52.211-12)

(a) If the Contractor fails to complete the work within the time specified in the Contract, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$1,742.00 for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

(d) Exception to Liquidated Damage: In case the Contracting Officer determines that completion of work stated above in paragraph Exception to Completion Period(s) is not feasible

during the completion period(s) stated in SC-1, such work will be exempted from liquidated damages.

SC-3 AND SC-4 DELETED.

SC-5. INSURANCE - WORK ON A GOVERNMENT INSTALLATION (JAN 1997) (FAR 52.228-5)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance period of this Contract at least the kinds and minimum amounts of insurance required in the Insurance Liability Schedule or elsewhere in the Contract.

(b) Before commencing work under this Contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective:

(1) for such period as the laws of the State in which this Contract is to be performed prescribe; or

(2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this Contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the Contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

(d) Insurance Liability Schedule (FAR 28.307-2)

(1) Workers' compensation and employer's liability. Contractors are required to comply with applicable Federal and State workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when Contract operations are so commingled with a Contractor's commercial operation that it would not be practical to require this coverage. Employer's liability coverage of at least \$100,000 shall be required, except in states with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.

(2) General Liability.

(a) The Contracting Officer shall require bodily injury liability insurance coverage written on the comprehensive form of policy of at least \$500,000 per occurrence.

(b) Property damage liability insurance shall be required only in special circumstances as determined by the agency.

(3) Automobile liability. The Contracting Officer shall require automobile liability insurance written on the comprehensive form of policy. The policy shall provide for bodily injury

and property damage liability covering the operation of all automobiles used in connection with performing the Contract. Policies covering automobiles operated in the United States shall provide coverage of at least \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage. The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.

(4) Aircraft public and passenger liability. When aircraft are used in connection with performing the Contract, the Contracting Officer shall require aircraft public and passenger liability insurance. Coverage shall be at least \$200,000 per person and \$500,000 per occurrence for bodily injury, other than passenger liability, and \$200,000 per occurrence for property damage. Coverage for passenger liability bodily injury shall be at least \$200,000 multiplied by the number of seats or passengers, whichever is greater.

(5) Environmental Liability. If this contract includes the transport, treatment, storage, or disposal of hazardous material waste the following coverage is required.

The Contractor shall ensure the transporter and disposal facility have liability insurance in effect for claims arising out of the death or bodily injury and property damage from hazardous material/waste transport, treatment, storage and disposal, including vehicle liability and legal defense costs in the amount of \$1,000,000.00 as evidenced by a certificate of insurance for General, Automobile, and Environmental Liability Coverage. Proof of this insurance shall be provided to the Contracting Officer.

SC-6 DELETED.

SC-7. PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984) (FAR 52.236-1): The Contractor shall perform on the site, and with its own organization, work equivalent to at least fifteen percent (15%) of the total amount of work to be performed under the Contract. The percentage may be reduced by a supplemental agreement to this Contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

SC-8. PHYSICAL DATA (APR 1984) (FAR 52.236-4): Data and information furnished or referred to below is for the Contractor's information. The Government will not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) Physical Conditions: The indications of physical conditions on the drawings and in the specifications are the result of site investigations by test holes shown on the drawings.

(b) Weather Conditions: Each bidder shall be satisfied before submitting his bid as to the hazards likely to arise from weather conditions. Complete weather records and reports may be obtained from any National Weather Service Office.

(c) Transportation Facilities: Each bidder, before submitting his bid, shall make an investigation of the conditions of existing public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the jobsite. The unavailability of transportation facilities or limitations thereon shall not become a basis for claims for damages or extension of time for completion of the work.

SC-9 DELETED.

SC-10. LAYOUT OF WORK (APR 1984) (FAR 52.236-17): The Contractor shall lay out its work from Government-established base lines and bench marks indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due, or to become due, to the Contractor.

SC-11. RESERVED

SC-12 AND SC-13 DELETED.

SC-14. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAY 1999)-
(EFARS 52.231-5000)

(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region VIII. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

(e) Copies of EP1110-1-8 "Construction Equipment Ownership and Operating Expense Schedule" Volumes 1 through 12 are available in Portable Document Format (PDF) and can be viewed or downloaded at <http://www.usace.army.mil/inet/usace-docs/eng-pamphlets/cecw.htm>. A CD-ROM containing (Volumes 1-12) is available through either the Superintendent of Documents or Government bookstores. For additional information telephone 202-512-2250, or access on the Internet at http://www.access.gpo.gov/su_docs.

SC-15. PAYMENT FOR MATERIALS DELIVERED OFF-SITE (MAY 1999)-(EFARS 52.232-5000)

(a) Pursuant to FAR clause 52.232-5, Payments Under Fixed Priced Construction Contracts, materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to: (1) materials required by the technical provisions; or (2) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

(b) Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item. In addition to petroleum products, payment for materials delivered off-site is limited to the following items: Any other construction material stored offsite may be considered in determining the amount of a progress payment.

SC-16 AND SC-17 DELETED

SC-18. CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)(DOD FAR SUPP 252.236-7001)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall--

- (1) Check all drawings furnished immediately upon receipt;
- (2) Compare all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies;
- (4) Be responsible for any errors which might have been avoided by complying with this paragraph (b); and
- (5) Reproduce and print contract drawings and specifications as needed.

(c) In general—

- (1) Large scale drawings shall govern small scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified in the index of drawings attached at the end of the Special Clauses.

SC-19 THROUGH SC-21 DELETED.

SC-22. EPA ENERGY STAR: The Government requires that certain equipment be Energy Star compliant. Initially, the sole Energy Star requirement shall be the self certification by the bidder that the specified equipment is Energy Star compliant. Within 3 months of the availability of an EPA sanctioned test for Energy Star compliance, the Contractor shall submit all equipment upgrades and additions for testing and provide proof of compliance to the Government upon completion of testing. Testing shall be at the Contractor's expense.

SC-23. RECOVERED MATERIALS: The Corps of Engineers encourages all bidders to utilize recovered materials to the maximum extent practicable. The attached APPENDIX R contains procurement guidelines for products containing recovered materials.

APPENDIX R

PART 247 - COMPREHENSIVE PROCUREMENT GUIDELINE FOR PRODUCTS CONTAINING RECOVERED MATERIALS

40 CFR Ch. 1 (9-1-99 Edition)

Subpart B-Item Designations

§ 247.10 Paper and paper products.

Paper and paper products, excluding building and construction paper grades.

§ 247.11 Vehicular products.

- (a) Lubricating oils containing re-refined oil, including engine lubricating oils, hydraulic fluids, and gear oils, excluding marine and aviation oils.
- (b) Tires, excluding airplane tire
- (e) Reclaimed engine coolants, excluding coolants used in non-vehicular applications.

247.12 Construction products.

- (a) Building insulation product including the following items:
 - (1) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock vermiculite, and perlite;
 - (2) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool).
 - (3) Board (sheathing, roof decking wall panel) insulation, including but not limited to structural fiberboard and laminated paperboard products perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and
 - (4) Spray-in-place insulation, including but not limited to foam-in-place polyurethane and polyisocyanurate and spray-on cellulose.
- (b) Structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing shingle backer, sound deadening board, roof insulating board, insulating wallboard, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels, floor underlayments, and roof overlay (cover board).
- (c) Cement and concrete, including concrete products such as pipe and block, containing coal fly as ground granulated blast furnace (GGBF) slag.
- (d) Carpet made of polyester fiber use in low- and medium-wear applications.
- (e) Floor tiles and patio block containing recovered rubber or plastic.
- (f) Shower and restroom dividers/partitions containing recovered plastic or steel.
- (g) (1) Consolidated latex paint used for covering graffiti; and
- (2) Reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood and metal surfaces.

§247.13 Transportation products.

- (a) Traffic barricades and traffic cones used in controlling or restricting vehicular traffic.
- (b) Parking stops made from concrete or containing recovered plastic or rubber.
- (c) Channelizers containing recovered plastic or rubber.
- (d) Delineators containing recovered plastic, rubber, or steel.
- (e) Flexible delineators containing recovered plastic.

§ 247.14 Park and recreation products

- (a) Playground surfaces and running tracks containing recovered rubber or plastic.
- (b) Plastic fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

247.15 Landscaping products.

- (a) Hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and as an over-spray for straw mulch in landscaping, erosion control, and soil reclamation.
- (b) Compost made from yard trimmings, leaves, and/or grass clippings for use in landscaping, seeding of grass or other plants on roadsides and embankments, as a nutritious mulch under trees and shrubs, and in erosion control and soil reclamation.
- (c) Garden and soaker hoses containing recovered plastic or rubber.
- (d) Lawn and garden edging containing recovered plastic or rubber.

§ 247.16 Non-paper office product.

- (a) Office recycling containers and office waste receptacles.
- (b) Plastic desktop accessories.
- (c) Toner cartridges.
- (d) Binders.
- (e) Plastic trash bags.
- (f) Printer ribbons.
- (g) Plastic envelopes.

§ 247.17 Miscellaneous products.

Pallets containing recovered wood, plastic, or paperboard.

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FORT LEWIS, WASHINGTON
Project Number: 25057
22s/191-90-12

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269	T-105	Telecommunications SW Quadrant		03APR11
270	T-105A	Telecommunications SW Quadrant Overhead Cable Tray		03APR11
271	T-105B	Telecommunications SW Quadrant Underfloor Cable Tray		03APR11
272	T-106	Telecommunications Mezzanine Plan East		03APR11
273	T-107	Telecommunications Mezzanine Plan West		03APR11
274	T-108	Telecommunications Guard House		03APR11
274A	T-200	Telecommunications Site Plan Existing Duct Bank Route		03APR30
274B	T-201	Telecommunications Site Plan New Duct Bank Route		03APR30
274C	T-202	Telecommunications Site Plan New Duct Bank Route		03APR30
274D	T-203	Telecommunications Site Plan Existing Duct Bank Route		03APR30
274E	T-204	Telecommunications Site Plan New Duct Bank Route		03APR30

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
274F	T-205	Telecommunications Site Plan New Duct Bank Route		03APR30
274G	T-206	Telecommunications OSP Copper Backbone Cabling Diagram		03APR30
274H	T-207	Telecommunications OSP Fiber Backbone Cabling Diagram		03APR30
274 I	T-300	Telecommunications MSTF Hut & Range Control Floor Plans		03APR30
274J	T-400	Telecommunications Security Plan	2	03MAY16
275	T-500	Telecommunications NOC Overview Room Detail		03APR11
276	T-501	Telecommunications DOIM/DSN/NIPR Room Detail		03APR11
277	T-501A	Telecommunications DOIM/DSN/NIPR Rack Detail		03APR11
278	T-501B	Telecommunications DOIM HOMACO Frame Details		03APR11
279	T-502	Telecommunications LH/Reach Room Detail		03APR11
280	T-503	Telecommunications SIPR RPPM Detail		03APR11
281	T-504	Telecommunications SIM/STIM Room Detail		03APR11
282	T-505	Telecommunications MSE Room Detail		03APR11
283	T-505A	Telecommunications MSE/FM Rack Detail		03APR11
284	T-506	Telecommunications C2 WAN Room All Details		03APR11
285	T-507	Telecommunications BSC/COMMO Room 1044 Details		03APR11
286	T-508	Telecommunications BSC/COMMO Room 104d Details		03APR11
287	T-509	Telecommunications BSC/COMMO Room 109b Details		03APR11
288	T-510	Telecommunications BSC/COMMO Room 107b Details		03APR11
289	T-511	Telecommunications BSC/COMMO SCIF Room 105d Details		03APR11
290	T-512	Telecommunications BSC/COMMO Room 118c Details		03APR11
291	T-513	Telecommunications BSC/COMMO Room 119a Details		03APR11
292	T-514	Telecommunications BSC/COMMO Room 127a Details		03APR11
293	T-515	Telecommunications BSC/COMMO Room 130a Details		03APR11
294	T-600	Telecommunications NOC Inter-Connectivity Diagram	1	03APR30
295	T-601	Telecommunications DSN Conduit & Cabling Riser Diagram	1	03APR30
296	T-601A	Telecommunications DSN Conduit Riser Diagram	1	03APR30
297	T-602	Telecommunications MSE Conduit & Cabling Riser Diagram	1	03APR30
298	T-603	Telecommunications SIPRNET Conduit & Cable Riser Diagram	1	03APR30
299	T-603A	Telecommunications SIPRNET Conduit Riser Diagram	1	03APR30
300	T-604	Telecommunications NIPRNET Conduit & Cable Riser Diagram	1	03APR30
301	T-605	Telecommunications C2 WAN Cabling Riser Diagram	1	03APR30
302	T-605A	Telecommunications C2 WAN Conduit Riser Diagram	1	03APR30
303	T-606	Telecommunications SIM/STIM Conduit & Cabling Riser Diagram	1	03APR30
304	T-607	Telecommunications LH Reach Conduit & Cabling Riser Diagram	1	03APR30
305	T-700	Details		03APR11

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
306	T-701	Details		03APR11
307	T-702	Details		03APR11
308	T-800	Telecommunications BSC Conduit Run Schedule		03APR11

DRAWING REVISIONS BY NOTATION

Drawing Index. Sheet 2, Plate G-101

- (a) Change drawing title to "Drawing Index/Maps" for Sheet 2, Plate G-101
- (b) Change drawing title to "Drawing Index/Maps" for Sheet 3, Plate G-102

Foundation/Flr Plan NE Quadrant, Sheet 54, Plate S-103

- (a) Delete footing designation "F6" located near Grid J-4.

Section "A", Sheet 66, Plate S-301

Revise footing thickness shown in Section A from 1'-0" [305] to 1'-3" [381] to match thickness shown in Concrete Footing Schedule on Plate S-300.

Floor Plan Northeast Quadrant, Sheet 104, Plate A-103

Add wall type "10C" between rooms "Mechanical 115A" and "Electrical 115B".

Window Types Window Schedules, Sheet 158, Plate A-603

Note: The following windows repeat themselves in the schedule, and need only appear once.

Room Finish Schedule, Sheet 161, Plate A-606

Room 104A, Ceiling Assembly should be "O.T.S", in lieu of "CA-3"

Civil Layout Plan, Sheet 19, Plate C-101

- (a) Add the following to the plan of this Sheet:

Expand the amount of the concrete pad at the northeast side of the building, as shown on the revised detail of Plate S-403. (For the diesel engine-generator.)

Composite Foundation/Floor Plan, Sheet 51, Plate S-100

- (a) For modifications (not shown) to electrical transformer and generator enclosure located near Grid H-3.1, see revised plan on Sheet 75, Plate S-403.

- (b) Revise diagonal screened patterning lines located on Drawing S-100 between approximate Grids B.2-D/4-5 from “dashed” to “solid” to match and reflect the “6-inch [152] raised floor system” patterning shown in the sheet Legend. NOTE: Patterning in this area to match the floor patterning shown in the SIM BAY’s.

Foundation/Flr Plan NE Quadrant, Sheet 54, Plate S-103

- (a) Revise note callout located near Grid H.7-3 to read “Elec Transformer & Generator Enclosure, see Sheet S-403” to reflect addition of electrical generator equipment; for enclosure modifications not shown, see revised plan on Sheet 75, Plate S-403.

Elec Transformer & Generator Enclosure Plan and Section, Sheet 75, Plate S-403

- (a) Revised overall sheet title to read “Elec Transformer & Generator Enclosure Plan and Section” to reflect addition of electrical generator equipment.

Elec Transformer & Generator Enclosure Plan and Section, Sheet 75, Plate S-403

- (a) Modified and revised PLAN to accommodate new electrical generator equipment. Modifications included eastward extension of thickened concrete slab-on-grade, extension of enclosure wall system (CMU wall with exterior brick veneer), addition of Notes 5 & 6, and modification of the title to reflect the electrical generator equipment addition.
- (b) See attached sheet SD-1 (Elec Transformer & Generator Enclosure Plan, Plate S-403).

Elec Transformer & Generator Enclosure Plan and Section, Section A, Sheet 75, Plate S-403

- (a) Modified slab thickness callout to reflect increased thickness at slab extension required for new electrical generator equipment.
- (b) See attached sheet SD-2 (Section A, Plate S-403).

Floor Plan Southwest Quadrant, Sheet 106, Plate A-105

- (a) Room 118B, Add wall type “11A” to north and east walls.
- (b) Room 119B, Add wall type “11A” to north and west walls.

Room Finish Schedule, Sheet 161, Plate A-606

- (a) Delete “WM-3 at ext. entry” from the remarks column at Rooms 105A, 115A, 115B, 116B and 116C.

HVAC and Plumbing Schedules, Sheet 191, Plate M-602

- (a) AIR HANDLING UNIT SCHEDULE

For AHU-3 Supply Fan ESP IN WG shall be revised to 1.75"

(b) AIR HANDLING UNIT SCHEDULE

Revise NOTE 2 to read as follows: Provide for single point electrical connection including transformers, breakers for controls, lights, etc. All supply and return fans shall be furnished with a factory mounted and wired VFD except AHU-2. AHU-2 shall only have a VFD associated with the return fan.

HVAC Control Diagram, Sheet 193, Plate M-604

- (a) AHU-1, 3, 4, 5 shall have a return duct CO2 sensor. Sensor to be located in an accessible location.
- (b) AHU-2 shall have a wall mounted CO2 sensor. Locate sensor near thermostat.
- (c) Provide a CO2 sensor to read the CO2 level of the outdoor air in each air handler. Locate sensors in the outside air plenum of the air handler. Install so the sensor is reading only the outside air stream.
- (d) Sequence of operation for CO2 sensor:
CO2 sensors for inside the building shall compare the CO2 levels against the outside air CO2 sensors and shall maintain the inside air CO2 levels to not greater than 530 PPM greater than the CO2 levels of the outside air. CO2 sensors shall override mixed air sensors/outside air dampers to not exceed the maximum indoor CO2 levels. Outside air dampers shall modulate from full open to full closed. Dampers shall maintain minimum outside air position as required maintain building pressure.

Piping Plan Northwest Quadrant, Sheet 201, Plate P-106

- (a) There is a discrepancy between the location of PF-6 on the Plumbing Drawing and the Architectural Drawings. Refer to the sheet A-102 for the actual location of the sink. The sink is actually located approximately 6' to the west of the location show on the mechanical drawings. Adjust the piping to match the actual location of the sink. PF-6 is a Kitchen Sink

Electrical General Notes, Sheet 215, Plate E-001

- (a) Add the following to the end of Telecommunication Requirements box of this Sheet:

Contact information for Spider Manufacturing:

Telephone: (250) 765-2616

Fax: (250) 765-2614

website address: www.spidermfg.com

mailing address: #5-364 Lougheed Rd., Kelowna, BC, Canada V1X 7R8

Electrical General Notes and Luminaire Schedule, Sheet 215, Plate E-001

- (a) Clarification: Fixture type S4 referenced on Luminaire Schedule shall be fixture type B4.

- (b) Clarification: Fixture type C2 is not used on this project.

Electrical Area Plan, Sheet 217, Plate E-100

- (a) Replace the last two lines of Note 1 of this Sheet with the following:

“...data cables provided by Communications Subcontractor; cable TV – coaxial (Commcast) cable provided by vendor through contract with the General Contractor.”

- (b) Replace the last sentence of Note 15 of this Sheet with the following:

“Remove cable at a minimum to the point of pole (S3)36, as shown on the Drawing; the cut end of any remaining portion of abandoned cable shall be encapsulated and sealed to achieve a permanent watertight condition. All lead-sheath cable which is removed shall be disposed of in accordance with Section 02220 DEMOLITION. The cable shall be replaced with a new cable, as shown on the T-series (Telecommunications) drawings/addendum.”

Electrical Site Plan, Sheet 218, Plate E-101

- (a) Add the following to the plan of this Sheet:

Locate the diesel engine-generator at the east end of the unit substation (Note 3). The expanded pad is shown on the revised detail of Plate S-403.

Lighting Plan Northwest Quadrant, Sheet 219, Plate E-102

- (a) In Note 8, replace “Type D2” with “Type D6”.
- (b) Clarification: All Type D6 fixtures shall be a dimming type.

Electrical Room and Substation Plan and Details, Sheet 231, Plate E-400

- (a) Add the following to Detail 3 of this Sheet:

Add (2) additional ground rods beyond the east end of the expanded pad / enclosure (to accommodate the engine-generator, as shown on the revised detail of Plate S-403) and connect to the ground ring with #3/0 bare copper ground conductor. Provide (2) connections from the buried ground conductor to the engine-generator frame and ground bus, in accordance with the manufacturer’s instructions.

Distribution Panel Schedules, Sheet 239, Plate E-603

(a) Add the following to the schedule for Panel SNK:

Add a 3-pole, 60A circuit breaker at pole positions 37, 39, 41 for the generator panel;
3000 va load on each of the phases.

DRAWING REVISIONS BY NOTATION AMENDMENT R0007

Irrigation Plan, Sheet 44, Plate L-101

(a) Delete "and in Section 02811, "Landscape Irrigation" from the last line of the option item description

Planting Plan, Sheet 45, Plate L-102

(a) Delete "and in Section 02930, "Exterior Plants" from the last line of the option item description

Roof Framing Plan – NW Quadrant, Sheet 57, Plate S-106

Add Plan note "8" as follows:

(b) Provide elevated structural platform for suspended electrical transformers located just north of Grid 5 near Grid C (typ of 3 places total) as follows:

- A. Platform system shall be able to support self weight plus 1000 lbs equipment dead load for each electrical transformer unit (TXPCP4, TXPCP5, and TXNA units; 3 total).
- B. Platform shall consist of 36" x 36" steel frame system with 3/16-inch steel plate cover welded to each steel frame support member. Unless otherwise noted, locate bottom of platform 2'-0" above finish ceiling; coord with arch, mech, and elec.
- C. Platforms shall be located as required in plan view (near location shown on electrical plans - see Drawing E-107) to align with roof joist panel point layout, coord with joist manufacturer.
- D. Steel frame system shall consist of C4x5.4 perimeter support members and (2) C4x5.4 interior support members located directly under each transformer equipment support; channel support members shall have welded (3/16-inch fillet all-around) end connections.
- E. Platform shall be suspended from roof joist system using (4) 3/8-inch diameter threaded rods (typ 1 per corner; 4 per unit) with double nut connection at top and bottom connections. Threaded rods shall be connected to channel platform support frame at bottom.
- F. Threaded rod top connection shall be connected to Unistrut P1000 structural support system (or approved equal) supported on roof joist bottom chords

and located adjacent to joist bottom chord panel points where possible.
Provide joist stiffeners as reqd, see Detail 5/S-705.

- G. Provide diagonal lateral bracing support of suspended platforms along each edge of platform and in both directions (total of 8 braces per platform). Bracing shall consist of one or more of the following: (1) hanger wire per Spec Section 09510 ACOUSTICAL CEILINGS, aircraft cable (1/8" dia minimum) with turnbuckle system, Unistrut support system, or other approved system. Each lateral brace support shall be capable of supporting a minimum of 200 lbs tension force. Lateral braces shall be connected to roof joist top chord members where possible. Provide additional joist cross brace bridging at locations where lateral brace system connects to joist bottom chord members.
- H. Transformer equipment shall be connected to platform steel channel with 5/8-inch diameter bolts (minimum one per corner); coord size and location with equipment manufacturer.
- I. Contractor shall be responsible to coordinate final electrical transformer equipment support dead load reactions and locations with roof joist manufacturer prior to design and fabrication of roof joists.

Exterior Details, Sheet 145, Plate A-505

- (a) Detail 10/A-506. Add notes pointing to infill wall at WF rail. "20 ga, 2 1/2 inch studs at 16" o.c., (1) layer 5/8" glass-matt faced gypsum panel"

Exterior Details, Sheet 145, Plate A-506

- (a) Detail 3/A-506, Delete note that reads "2 1/2" [64] Metal Stud Framing".

Comm Connection at Building 2003, Sheet 168a, Plate A-704

- (a) Add a general note that all work on this sheet is part of Option Item No. 0013.

Furniture Floor Plan Northwest Quadrant, Sheet 169, Plate I-102

- (c) Revise General Note 2 to read as follows:
"See Specification Section 12705 for typical systems furniture layouts and components list"

Furniture Floor Plan Northeast Quadrant, Sheet 170, Plate I-103

- (a) Revise General Note 2 to read as follows:
"See Specification Section 12705 for typical systems furniture layouts and components list"

Furniture Floor Plan Southeast Quadrant, Sheet 171, Plate I-104

- (a) Revise General Note 2 to read as follows:
"See Specification Section 12705 for typical systems furniture layouts and components list"

Furniture Floor Plan Southwest Quadrant, Sheet 172, Plate I-105

- (a) Revise General Note 2 to read as follows:
"See Specification Section 12705 for typical systems furniture layouts and components list"

HVAC Plan – SE Quadrant, Sheet 181, Plate M-104

On Sheet M-04 at approximately grid 9.3/E.9 Key Note #6 points to a 18" diameter duct. Key note #6 does not apply to this particular piece of ductwork. Delete this note reference to the 18" diameter duct.

Telecommunications OSP Copper Backbone Cabling Diagram, Sheet 274G, Plate T-206

- (a) Copper cable routed between V#12 and V#16 shall be changed to PE-89 300 pair from 700 pair as currently shown on drawing.

Details, Sheet 306, Plate T-701

- (a) Add general note that states; "MSE and FM outlets use Category 6 cable. FM outlets have one set of binding posts and MSE outlets have two sets of binding posts required. Each FM and MSE outlet gets (1) Cat 6 cable pulled to it. A typical Cruz box will require (6) Cat 6 cables for the FM and MSE outlets since there are (3) FM and (3) MSE outlets. In the Commo Rooms these Cat 6 cables will terminate on the 66 wall field for MSE/FM. Coordinate exact pair termination with owner."

Electrical General Notes and Luminaire Schedule, Sheet 215, Plate E-001

- (b) Clarification: Fixture type S4 referenced on Luminaire Schedule shall be fixture type B4.
(c) Clarification: Fixture type C2 is not used on this project.

Lighting Plan Northwest Quadrant, Sheet 219, Plate E-102

- (c) In Note 8, replace "Type D2" with "Type D6".
(d) Clarification: All Type D6 fixtures shall be a dimming type.

Electrical Room and Substation Plan and Details, Sheet 231, Plate E-400

- (a) Detail 3/E-400, Electrical Room and Substation Plan - TXPCP9 should be located in the transformer rack, not TXPCP4, as this was mislabeled.
(b) Locations for TXPCP4 and TXPCP5 are shown on Drawing E-107.
(c) Mounting for TXPCP4, TXPCP5, and TXNA on platforms from the roof structure is addressed in this Amendment 0007, in association with the structural drawings / package.

Foundation/FIr Plan NE Quadrant, Sheet 54, Plate S-103

- (a) Delete footing designation "F6" located near Grid J-4.

Section "A", Sheet 66, Plate S-301

- (a) Revise footing thickness shown in Section A from 1'-0" [305] to 1'-3" [381] to match thickness shown in Concrete Footing Schedule on Plate S-300.

DRAWING REVISIONS BY NOTATION IN AMENDMENT R0008

Wall Types, Sheets 155 and 156, Plates A-600 and A-601

Revise Brick Size in wall types 1, 2, 5, 6, 15 and 16 to be 3-5/8" wide, 2-1/4" high and 8" long.

DRAWING REVISIONS BY NOTATION AMENDMENT R0010

Site Layout Plan, Sheet 19, Plate C-101

(a) Revise note near lower left side of the sheet that reads "Future Guardhouse N.I.C" to read as follows "Provide (2) pre-manufactured exit guardhouses in locations indicated and as specified in Section 13121, Pre-fabricated Guardhouses. Reference Electrical drawings for additional Power and Communications requirements"

Misc. Details – Roadway / Storm Drainage, Sheet 37, Plate C-508

(a) Revise Boot Scraper Basin Detail No. to be R-15 in lieu of R-19A

(b) Revise Comm. Line Duct Assembly Detail No. to be R-20 in lieu of R-22

(c) Revise Comm. Pull Box Detail No. to be R-20A in lieu of R-22.

Framing Details, Sheet 164, Plate A-609

(a) Add to all No. 2 callouts for "Bracing" a note that indicates the braces are to occur at 4'-0" on center.

Comm. Connection at Building 2003, Sheet 168a, Plate A-704

(a) Delete general note added by Amendment R0007 that stated "all work on this sheet is part of Option Item No. 0013." The work on this sheet is Base Bid.

Electrical Site Plan, Sheet 218, Plate E-101

(a) Add the following general note to this sheet:

"Provide and install power and communication service lines and support equipment for the two (2) Pre-manufactured Exit Guardhouses as follows: Provide each location with 2" conduit w/ pull rope from Commo Room 127A to Guardhouse. Coordinate stub-in location at guardhouse with contracting officer. Provide each location with 1" conduit w/ 2#2, 1#8 ground from Switchboard #4 (in Elec. rm. 127B) to guardhouse 100A panel."

Power One-Line Diagram, Sheet 236, Plate E-600

(a) Add the following general note to this sheet:

"Provide each of the two pre-manufactured guardhouse locations with 1" conduit w/ 2#2, 1#8 ground from Switchboard #4 (in Elec. rm. 127B) to guardhouse 100A panel. Provide and install two (2) 100A single pole breaker in Switchboard #4 - one for each exit guardhouse."

Telecommunications Exterior Conduit and T.I.P Plan, Sheet 255, Plate T-001

(a) Add the following general note to this sheet:

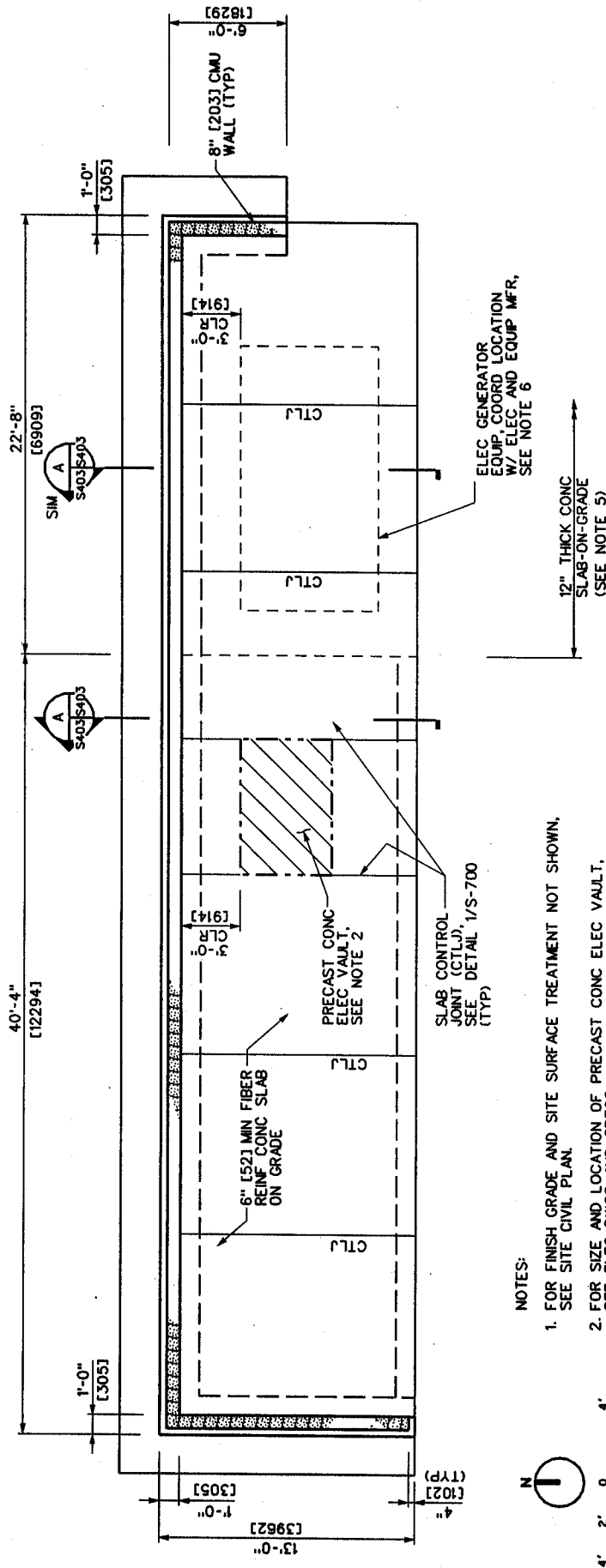
"Provide from Commo Room 127A to each pre-manufactured exit guardhouse (2) 4-pair cat-6 cables for voice connections."

STANDARD DETAILS BOUND IN THE SPECIFICATIONS

DRAWING NUMBER	SHEET NUMBER	TITLE	DATE
<u>SECTION 01501 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS</u>			
49s/40-05-15	1 & 2	U.S. Army Project Construction Sign	84JUN20
	1	Hard Hat Sign	10SEP90

Attachments follow.

**REVISED
ADDENDUM
No. 2**



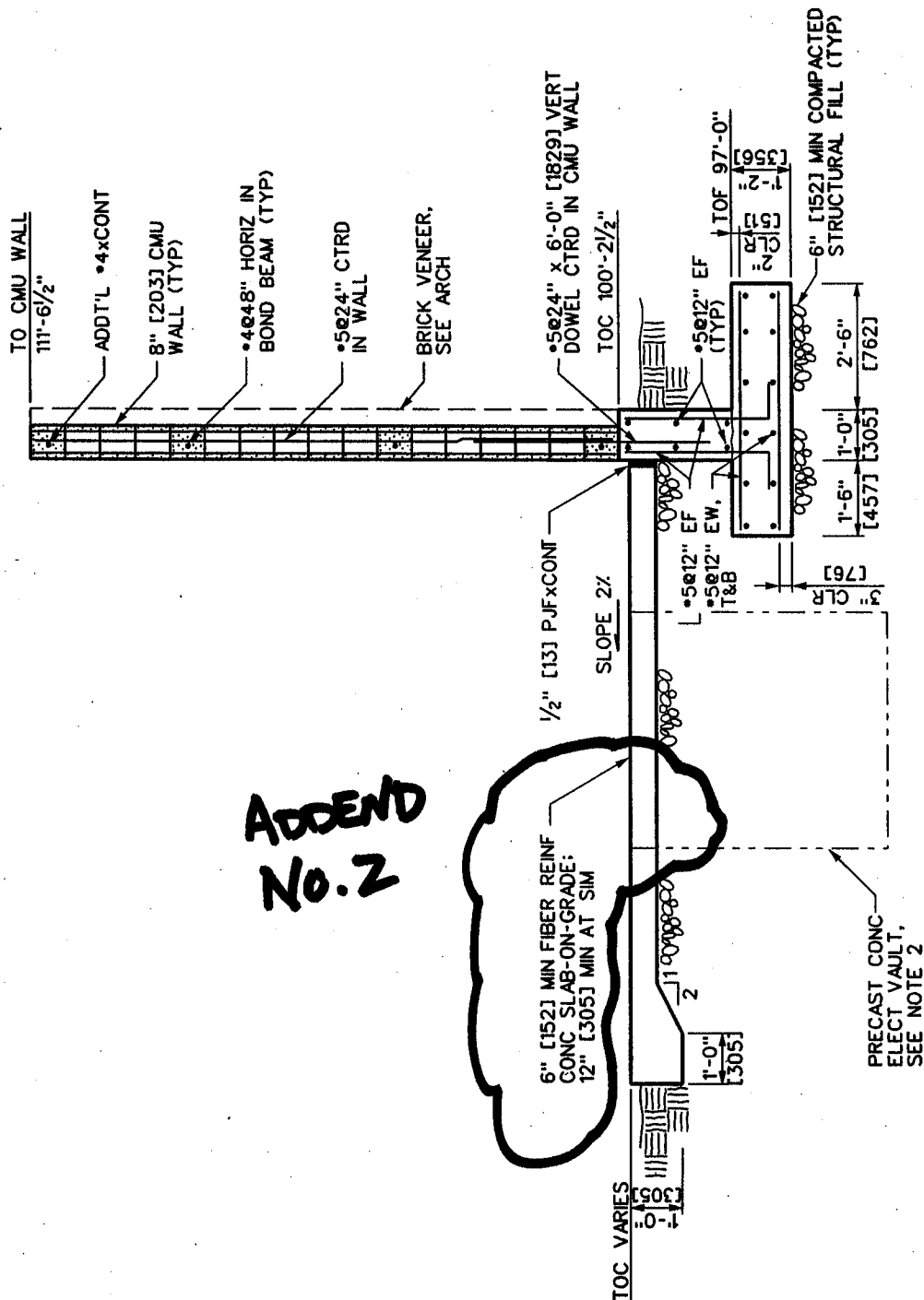
NOTES:

1. FOR FINISH GRADE AND SITE SURFACE TREATMENT NOT SHOWN, SEE SITE CIVIL PLAN.
2. FOR SIZE AND LOCATION OF PRECAST CONC ELEC VAULT, SEE ELEC DWGS AND SPECS.
3. FOR EXTER BRICK VENEER AND PRECAST CONC WALL CAP NOT SHOWN, SEE ARCH.
4. FOR ADDT REIN AT CMU WALL CORNERS/INTERSECTIONS AND WALL OPNGS, SEE DETAILS 1/S-701 AND 2/S-701 RESPECTIVELY.
5. PROVIDE #5@12" REIN EW, T&B IN 12-INCH THICK CONC SLAB ON GRADE, EXTEND REIN 3'-0" INTO 6-INCH CONC SLAB ON GRADE.
6. COORD LOCATION OF ELEC GENERATOR EQUIP WITH ELEC AND EQUIP MFR. EQUIP SHALL BE ANCHORED IN ACCORDANCE WITH EQUIP MFR RECOMMENDATIONS (MIN OF 3/4" DIA CONC ANCHOR AT EA CORNER AND AT 4 FT [1219] O.C. ALONG PERIM).

ELEC TRANSFORMER & GENERATOR ENCLOSURE PLAN
1/4"=1'-0"

SD-1

S-403



ADDEND
No. 2

1. NOTES:
FOR BRICK VENEER AND ARCH PRECAST CONC
WALL CAP NOT SHOWN, SEE ARCH.
2. FOR PRECAST CONC ELEC VAULT SIZE AND
DETAILS NOT SHOWN, SEE ELEC DWGS AND
SPECS.
3. FOR TOP OF CONC SLAB ELEVATIONS NOT SHOWN,
SEE CONC CIVIL SITE PLAN.

A SECTION
S403/S403 1/2"=1'-0"

SD-2

S-403

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GENERAL DECISION WA030001 06/13/2003 WA1

Date: June 13, 2003

General Decision Number WA030001

Superseded General Decision No. WA020001

State: Washington

Construction Type:

DREDGING

HEAVY

HIGHWAY

County(ies):

STATEWIDE

HEAVY AND HIGHWAY AND DREDGING CONSTRUCTION PROJECTS

(Excludes D.O.E. Hanford Site in Benton and Franklin Counties)

Modification Number

0

Publication Date

06/13/2003

COUNTY(ies):

STATEWIDE

CARP0001W 06/01/2002

COLUMBIA RIVER AREA - ADAMS, BENTON, COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN, GRANT, OKANOGAN (EAST OF THE 120TH MERIDIAN) AND WALLA WALLA COUNTIES

CARPENTERS:

	Rates	Fringes
GROUP 1:	23.58	6.25
GROUP 2:	24.69	6.25
GROUP 3:	23.85	6.25
GROUP 4:	23.58	6.25
GROUP 5:	58.43	6.25
GROUP 6:	27.72	6.25

SPOKANE AREA: ASOTIN, GARFIELD, LINCOLN, PEND OREILLE, SPOKANE, STEVENS AND WHITMAN COUNTIES

CARPENTERS:

GROUP 1:	22.91	6.25
GROUP 2:	24.01	6.25
GROUP 3:	23.17	6.25
GROUP 4:	22.91	6.25
GROUP 5:	56.77	6.25
GROUP 6:	27.00	6.25

CARPENTERS CLASSIFICATIONS

GROUP 1: Carpenter; Burner-Welder; Rigger and Signaler;

Insulators (all types), Acoustical, Drywall and Metal Studs, Metal Panels and Partitions; Floor Layer, Sander, Finisher and Astro Turf; Layout Carpenters; Form Builder; Rough Framers; Outside or Inside Finisher, including doors, windows, and jams; Sawfiler; Shingler (wood, composition) Solar, Fiberglass, Aluminum or Metal; Scaffold Erecting and Dismantling; Stationary Saw-Off Bearer; Wire, Wood and Metal Lather Applicator

GROUP 2: Millwright, machine erector

GROUP 3: Piledriver - includes driving, pulling, cutting, placing collars, setting, welding, or creosote treated material, on all piling

GROUP 4: Bridge, dock and wharf carpenters

GROUP 5: Divers

GROUP 6: Divers Tender

DEPTH PAYY FOR DIVERS:

Each foot over 50-100 feet	\$1.00
Each foot over 100-175 feet	2.25
Each foot over 175-250 feet	5.50

HAZMAT PROJECTS

Anyone working on a HAZMAT job (task), where HAZMAT certification is required, shall be compensated at a premium, in addition to the classification working in as follows:

LEVEL D + \$.25 per hour - This is the lowest level of protection. No respirator is used and skin protection is minimal.

LEVEL C + \$.50 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B + \$.75 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit".

LEVEL A +\$1.00 per hour - This level utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line.

CARP00030 06/01/2002

	Rates	Fringes
SOUTHWEST WASHINGTON: CLARK, COWLITZ, KLUCKITAT, LEWIS(Piledriver only), PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to Willapa Bay to the Pacific Ocean), SKAMANIA AND WAHAKIACUM COUNTIES and INCLUDES THE ENTIRE PENINSULA WEST OF WILLAPA BAY		

SEE ZONE DESCRIPTION FOR CITIES BASE POINTS

ZONE 1:

CARPENTERS; ACOUSTICAL	27.37	8.80
DRYWALL	27.37	8.80
FLOOR LAYERS & FLOOR FINISHERS (the laying of all hardwood floors nailed and mastic set, parquet and wood-type tiles, and block floors,		

the sanding and finishing of floors,
the preparation of old and new
floors when the materials mentioned
above are to be installed); INSULATORS
(fiberglass and similar irritating

materials	27.52	8.80
MILLWRIGHTS	27.87	8.80
PILEDRIERS	27.87	8.80
DIVERS	65.05	8.80
DIVERS TENDERS	29.91	8.80

DEPTH PAY

50 TO 100 FEET	\$1.00 PER FOOT OVER 50 FEET
100 TO 150 FEET	1.50 PER FOOT OVER 100 FEET
150 TO 200 FEET	2.00 PER FOOT OVER 150 FEET

Zone Differential (Add up Zone 1 rates):

Zone 2 - \$0.85

Zone 3 - 1.25

Zone 4 - 1.70

Zone 5 - 2.00

Zone 6 - 3.00

BASEPOINTS: ASTORIA, LONGVIEW, PORTLAND, THE DALLES,
AND VANCOUVER, (NOTE: All dispatches for Washington State
Counties: Cowlitz, Wahkiakum and Pacific shall be from Longview
Local #1707 and mileage shall be computed from that point.)

ZONE 1: Projects located within 30 miles of the respective
city hall of the above mentioned cities

ZONE 2: Projects located more than 30 miles and less than 40
miles of the respective city of the above mentioned
cities

ZONE 3: Projects located more than 40 miles and less than 50
miles of the respective city of the above mentioned
cities

ZONE 4: Projects located more than 50 miles and less than 60
miles of the respective city of the above mentioned
cities.

ZONE 5: Projects located more than 60 miles and less than 70
miles of the respective city of the above mentioned
cities

ZONE 6: Projects located more than 70 miles of the respected
city of the above mentioned cities

CARP0770D 06/01/2002

	Rates	Fringes
WESTERN WASHINGTON: CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS (excludes piledrivers only), MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM COUNTIES		

CARPENTERS AND DRYWALL APPLICATORS	27.95	8.05
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CARPENTERS ON CREOSOTE MATERIAL	28.05	8.05
INSULATION APPLICATORS	25.50	8.05
SAWFILERS, STATIONARY POWER SAW OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLER, FLOOR SANDER OPERATOR AND OPERATORS OF OTHER STATIONARY WOOD WORKING TOOLS	28.08	8.05
MILLWRIGHT AND MACHINE ERECTORS	28.95	8.05
ACOUSTICAL WORKERS	28.11	8.05
PILEDRIIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CREOSOTE TREATED MATERIAL, ALL PILING	28.15	8.05
PILEDRIIVER, BRIDGE, DOCK & WHARF CARPENTERS	27.95	8.05
DIVERS	68.97	8.05
DIVERS TENDER	30.68	8.05

(HOURLY ZONE PAY: WESTERN AND CENTRAL WASHINGTON - ALL

CLASSIFICATIONS EXCEPT MILLWRIGHTS AND PILEDRIIVERS

Hourly Zone Pay shall be paid on jobs located outside of the free zone computed from the city center of the following listed cities:

Seattle	Olympia	Bellingham
Auburn	Bremerton	Anacortes
Renton	Shelton	Yakima
Aberdeen-Hoquiam	Tacoma	Wenatchee
Ellensburg	Everett	Port Angeles
Centralia	Mount Vernon	Sunnyside
Chelan	Pt. Townsend	

Zone Pay	
0 -25 radius miles	Free
25-35 radius miles	\$1.00/hour
35-45 radius miles	\$1.15/hour
45-55 radius miles	\$1.35/hour
Over 55 radius miles	\$1.55/hour

(HOURLY ZONE PAY: WESTERN AND CENTRAL WASHINGTON - MILLWRIGHT AND PILEDRIIVER ONLY)

Hourly Zone Pay shall be computed from Seattle Union Hall, Tacoma City center, and Everett City center

Zone Pay	
0 -25 radius miles	Free
25-45 radius miles	\$.70/hour
Over 45 radius miles	\$1.50/hour

CENTRAL WASHINGTON: CHELAN, DOUGLAS (WEST OF THE 120TH MERIDIAN), KITTITAS, OKANOGAN (WEST OF THE 120TH MERIDIAN) AND YAKIMA COUNTIES

CARPENTERS AND DRYWALL APPLICATORS	20.72	7.82
CARPENTERS ON CREOSOTED MATERIAL	20.82	7.82

INSULATION APPLICATORS	20.72	7.82
SAWFILERS, STATIONARY POWER S37 OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLERS, FLOOR SANDER OPERATORS	20.85	7.82
MILLWRIGHT AND MACHINE ERECTORS	28.95	7.82
PILEDRIIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CRESOTE TREATED MATERIAL, ALL PILING	28.15	7.82
PILEDRIIVER, BRIDGE DOCK AND WHARF CARPENTERS	27.95	7.82
DIVERS	68.97	8.05
DIVERS TENDER	30.68	8.05

ELEC0046A 12/30/2002		
	Rates	Fringes
CALLAM, JEFFERSON, KING AND KITSAP COUNTIES		
ELECTRICIANS	34.25	3%+9.55
CABLE SPLICERS	37.68	3%+9.55

ELEC0048C 01/01/2003		
	Rates	Fringes
CLARK, KCLICKITAT AND SKAMANIA COUNTIES		
ELECTRICIANS	31.00	3%+11.83
CABLE SPLICERS	31.25	3%+11.83

ELEC0073A 01/01/2003		
	Rates	Fringes
ADAMS, FERRY, LINCOLN, PEND OREILLE, SPOKANE, STEVENS, WHITMAN COUNTIES		
ELECTRICIANS	24.07	3%+10.63
CABLE SPLICERS	24.47	3%+10.63

ELEC0076B 07/01/2002		
	Rates	Fringes
GRAYS HARBOR, LEWIS, MASON, PACIFIC, PIERCE, AND THURSTON COUNTIES		
ELECTRICIANS	29.78	3%+11.01
CABLE SPLICERS	32.76	3%+11.01

ELEC0077C 02/01/2003		
	Rates	Fringes
LINE CONSTRUCTION:		
CABLE SPLICERS	37.95	3.875%+7.45
LINEMEN, POLE SPRAYERS, HEAVY LINE EQUIPMENT MAN	33.88	3.875%+7.45
LINE EQUIPMENT MEN	29.14	3.875%+5.70

POWDERMEN, JACKHAMMERMEN	25.41	3.875%+5.70
GROUNDMEN	23.72	3.875%+5.70
TREE TRIMMER	23.81	3.875%+5.70

ELEC0112E 06/01/2002

	Rates	Fringes
ASOTIN, BENTON, COLUMBIA, FRANKLIN, GARFIELD, KITTITAS, WALLA WALLA, YAKIMA COUNTIES		

ELECTRICIANS	28.75	3%+9.63
CABLE SPLICERS	30.19	3%+9.63

ELEC0191C 08/31/2002

	Rates	Fringes
ISLAND, SAN JUAN, SNOHOMISH, SKAGIT AND WHATCOM COUNTIES		

ELECTRICIANS	30.66	3%+9.33
CABLE SPLICERS	33.72	3%+9.33

ELEC0191D 12/01/2002

	Rates	Fringes
CHELAN, DOUGLAS, GRANT AND OKANOGAN COUNTIES		

ELECTRICIANS	26.66	3%+9.28
CABLE SPLICERS	29.33	3%+9.28

ELEC0970A 01/01/2003

	Rates	Fringes
COWLITZ AND WAHKIAKUM COUNTIES		

ELECTRICIANS	28.55	3%+9.25
CABLE SPLICERS	31.41	3%+9.25

ENGI0302E 06/01/2002

	Rates	Fringes
CHELAN (WEST OF THE 120TH MERIDIAN), CLALLAM, DOUGLAS (WEST OF THE 120TH MERIDIAN), GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, KITTITAS, MASON, OKANOGAN (WEST OF THE 120TH MERIDIAN), SAN JUAN, SKAGIT, SNOHOMISH, WHATCOM AND YAKIMA (WEST OF THE 120TH MERIDIAN) COUNTIES		

PROJECTS

CATEGORY A PROJECTS (excludes Category B projects, as show
below)

POWER EQUIPMENT OPERATORS:

Zone 1 (0-25 radius miles):

GROUP 1AAA	31.14	8.40
GROUP 1AA	30.64	8.40
GROUP 1A	30.14	8.40
GROUP 1	29.64	8.40
GROUP 2	29.20	8.40

GROUP 3	28.84	8.40
GROUP 4	26.74	8.40

Zone 2 (26-45 radius miles) - Add \$.70 to Zone 1 rates
 Zone 3 (Over 45 radius miles) - Add \$1.00 to Zone 1 rates

BASEPOINTS: Bellingham, Mount Vernon, Kent, Port Angeles, Port Townsend, Aberdeen, Shelton, Bremerton, Wenatchee, Yakima, Seattle, Everett

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1AAA - Cranes-over 300 tons or 300 ft. of boom (including job with attachments)

GROUP 1AA - Cranes - 200 tons to 300 tons or 250 ft. of boom (including jib and attachments); Tower crane over 175 ft. in height, base to boom

GROUP 1A - Cranes - 100 tons thru 199 tons or 150' of boom (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Tower crane up to 175 ft. in height base to boom; Loader-overhead, 8 yards and over; Shovel, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes-45 tons thru 99 tons, under 150 ft. of boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Shovel, excavator, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader-overhead, 6 yards to, but not including 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9, HD 41, d-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self-propelled-45 yards and over; Slipform pavers; Transporters, all track or truck type

GROUP 2 - Barrier machine (zipper); Barch Plant opeator-concrete; Bump cutter; Cranes-20 tons thru 44 tons with attachments; Cranes-overheads, bridge type-20 tons through 44 tons; Chipper; Concrete pump-truck mount with boom attachment; Crusher; Deck Engineer/Deck Winches (power); Drilling machine; Excavator, shovel backhoe-3 yards and under; Finishing machine Bidwell, Gamaco and similar equipment; Guardrail punch; Horizontal/directional drill operator; Loaders, overhead under 6 yds.; Loaders-plant feed; Locomotives-all; Mechanics-all; Mixers-asphalt plant; Motor patrol graders-finishing; Pilddriver (other than crane mount); Roto-mill, roto-grinder; Screedman, Spreader, Topside Operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self-propelled, hard tail end dump, articulating off-road equipment-under 45 yards; Subgrader trimmer; Tractors, backhoes-over 75 hp; Transfer material service machine-shuttle buggy, blow knox, roadtec; Truck crane oiler/driver-100 tons and over; Truck mount portable conveyor;Yo Yo Pay Dozer

GROUP 3 - Conveyors; Cranes-thru 19 tons with attachments;

Cranes-A-frame over 10 tons; Drill oilers-auger type, truck or crane mount; Dozers D9 and under; Forklifts-3000 lbs and over with attachments; horizontal/directional drill locator; Outside hoists-(elevators and manlifts), air tuggers, strao tower bucket elevators; Hydralifts/boom truck-over 10 tons; Loader-elevating type belt; Motor Patrol Grader-non-finishing; Plant Oiler-asphalt, crusher; Pumps-concrete; Roller, plant mix or multi-lift materials; Saws-concrete; Scrapers-concrete and carryall; Service engineers-equipment; Trenching machines; Truck crane oiler/driver-under 100 tons Tractors, backhoes-under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Cranes-A-frame-10 tons and under; Elevator and manlift-permanent and shaft type; Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts, boom trucks-10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Post Hole Digger-mechanical; Power

Plant; Pumps-water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shot crete/gunite equipment operator

CATEGORY B PROJECTS - 95% of the basic hourly rate for each group plus full fringe benefits applicable to Category A projects shall apply to the following projects. Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and structures whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000.

WORK PERFORMED ON HYDRAULIC DREDGES:

Total Project Cost \$300,000 and over

GROUP 1	28.38	8.40
GROUP 2	28.48	8.40
GROUP 3	28.82	8.40
GROUP 4	28.87	8.40
GROUP 5	30.26	8.40
GROUP 6	28.38	8.40

GROUP 1: Assistant Mate (Deckhand)

GROUP 2: Oiler

GROUP 3: Assistant Engineer (Electric, Diesel, Steam or Booster Pump); Mates and Boatmen

GROUP 4: Craneman, Engineer Welder

GROUP 5: Leverman, Hydraulic

GROUP 6: Maintenance

Total Project cost under \$300,000

GROUP 1	26.96	8.40
GROUP 2	27.06	8.40
GROUP 3	27.38	8.40
GROUP 4	27.43	8.40

GROUP 5	28.75	8.40
GROUP 6	26.96	8.40

GROUP 1: Assistant Mate (Deckhand)
 GROUP 2: Oiler
 GROUP 3: Assistant Engineer (Electric, Diesel, Steam,
 or Booster Pump); Mates and Boatmen
 GROUP 4: Craneman, Engineer Welder
 GROUP 5: Leverman, Hydraulic
 GROUP 6: Maintenance

HEAVY WAGE RATES (CATEGORY A) APPLIES TO CLAM SHELL DREDGE, HOE
 AND DIPPER, SHOVELS AND SHOVEL ATTACHMENTS, CRANES AND
 BULLDOZERS.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft
 classifications subject to working inside a federally designated
 hazardous perimeter shall be eligible for compensation in

accordance with the following group schedule relative to the
 level of hazardous waste as outlined in the specific hazardous
 waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not
 outfitted with protective clothing
 H-2 Class "C" Suit - Base wage rate plus \$.25 per hour.
 H-3 Class "B" Suit - Base wage rate plus \$.50 per hour.
 H-4 Class "A" Suit - Base wage rate plus \$.75 per hour.

 ENGI0370C 06/01/2002

	Rates	Fringes
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ADAMS, ASOTIN, BENTON, CHELAN (EAST OF THE 120TH MERIDIAN),
 COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN,
 GARFIELD, GRANT, LINCOLN, OKANOGAN (EAST OF THE 120TH MERIDIAN),
 PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN AND YAKIMA
 (EAST OF THE 120TH MERIDIAN) COUNTIES

ZONE 1:

POWER EQUIPMENT OPERATORS:

GROUP 1A	20.94	6.52
GROUP 1	21.49	6.52
GROUP 2	21.81	6.52
GROUP 3	22.42	6.52
GROUP 4	22.58	6.52
GROUP 5	22.74	6.52
GROUP 6	23.02	6.52
GROUP 7	23.29	6.52
GROUP 8	24.39	6.52

ZONE DIFFERENTIAL (Add to Zone 1
 rate): Zone 2 - \$2.00

Zone 1: Within 45 mile radius of Spokane, Moses Lake, Pasco,
 Washington; Lewiston, Idaho

Zone 2: Outside 45 mile radius of Spokane, Moses Lake, Pasco,
 Washington; Lewiston, Idaho

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1A: Boat Operator; Crush Feeder; Oiler; Steam Cleaner

GROUP 1: Bit Grinders; Bolt Threading Machine; Compressors (under 2000 CFM, gas, diesel, or electric power); Deck Hand; Drillers Helper (Assist driller in making drill rod connections, service drill engine and air compressor, repair drill rig and drill tools, drive drill support truck to and on the job site, remove drill cuttings from around bore hole and inspect drill rig while in operation); Fireman & Heater Tender; Grade Checker; Hydro-seeder, Mulcher, Nozzleman; Oiler Driver, & Cable Tender, Mucking Machine; Pumpman; Rollers, all types on subgrade, including seal and chip coatings (farm type, Case, John Deere & similar, or Compacting Vibrator), except when pulled by Dozer with operable blade; Welding Machine

GROUP 2: A-frame Truck (single drum); Assistant Refrigeration Plant (under 1000 ton); Assistant Plant Operator, Fireman or Pugmixer (asphalt); Bagley or Stationary Scraper; Belt Finishing Machine; Blower Operator (cement); Cement Hog; Compressor (2000 CFM or over, 2 or more, gas diesel or electric power); Concrete Saw (multiple cut); Distributor Leverman; Ditch Witch or similar; Elevator Hoisting Materials; Dope Pots (power agitated); Fork Lift or Lumber Stacker, hydra-lift & similar; Gin Trucks (pipeline); Hoist, single drum; Loaders (bucket elevators and conveyors); Longitudinal Float; Mixer (portable-concrete); Pavement Breaker, Hydra-Hammer & similar; Power Broom; Railroad Ballast Regulation Operator (self-propelled); Railroad Power Tamper Operator (self-propelled); Railroad Tamper Jack Operator (self-propelled); Spray Curing Machine (concrete); Spreader Box (self-propelled); Straddle Buggy (Ross & similar on construction job only); Tractor (Farm type R/T with attachment, except Backhoe); Tugger Operator

GROUP 3: A-frame Truck (2 or more drums); Assistant Refrigeration Plant & Chiller Operator (over 1000 ton); Backfillers (Cleveland & similar); Batch Plant & Wet Mix Operator, single unit (concrete); Belt-Crete Conveyors with power pack or similar; Belt Loader (Kocal or similar); Bending Machine; Bob Cat; Boring Machine (earth); Boring Machine (rock under 8" bit) (Quarry Master, Joy or similar); Bump Cutter (Wayne, Saginaw or similar); Canal Lining Machine (concrete); Chipper (without crane); Cleaning & Doping Machine (pipeline); Deck Engineer; Elevating Belt-type Loader (Euclid, Barber Green & similar); Elevating Grader-type Loader (Dumor, Adams or similar); Generator Plant Engineers (diesel or electric); Gunnite Combination Mixer & Compressor; Locomotive Engineer; Mixermobile; Mucking Machine; Posthole Auger or Punch; Pump (grout or jet); Soil Stabilizer (P & H or similar); Spreader Machine; Tractor (to D-6 or equivalent) and Traxcavator; Traverse Finish Machine; Turnhead Operator

GROUP 4: Concrete Pumps (squeeze-crete, flow-crete, pump-crete, Whitman & similar); Curb Extruder (asphalt or concrete); Drills (churn, core, calyx or diamond)(operate

drilling machine, drive or transport drill rig to and on job site and weld well casing); Equipment Serviceman; Greaser & Oiler; Hoist (2 or more drums or Tower Hoist); Loaders (overhead & front-end, under 4 yds. R/T); Refrigeration Plant Engineer (under 1000 ton); Rubber-tired Skidders (R/T with or without attachments); Surface Heater & Plant Machine; Trenching Machines (under 7 ft. depth capacity); Turnhead (with re-screening); Vacuum Drill (reverse circulation drill under 8" bit)

GROUP 5: Backhoe (under 45,000 gw); Backhoe & Hoe Ram (under 3/4 yd.); Carrydeck & Boom Truck (under 25 tons); Cranes (25 tons & under), all attachments including clamshell, dragline; Derricks & Stifflegs (under 65 tons); Drilling Equipment(8" bit & over) (Robbins, reverse circulation & similar)(operates drilling machine, drive or transport drill rig to and on job site and weld well casing); Hoe Ram; Piledriving Engineers; Paving (dual drum); Railroad Track Liner Operatr (self-propelled);

Refrigeration Plant Engineer (1000 tons & over); Signalman (Whirleys, Highline Hammerheads or similar)

GROUP 6: Asphalt Plant Operator; Automatic Subgrader (Ditches & Trimmers)(Autograde, ABC, R.A. Hansen & similar on grade wire); Backhoe (45,000 gw and over to 110,000 gw); Backhoes & Hoe Ram (3/4 yd. to 3 yd.); Batch Plant (over 4 units); Batch & Wet Mix Operator (multiple units, 2 & incl. 4); Blade Operator (motor patrol & attachments, Athey & Huber); Boom Cats (side); Cable Controller (dispatcher); Clamshell Operator (under 3 yds.); Compactor (self-propelled with blade); Concrete Pump Boom Truck; Concrete Slip Form Paver; Cranes (over 25 tons, to and including 45 tons), all attachments including clamshell, dragline; Crusher, Grizzle & Screening Plant Operator; Dozer, 834 R/T & similar; Draglines (under 3 yds.); Drill Doctor; H.D. Mechanic; H.D. Welder; Loader Operator (front-end & overhead, 4 yds. incl. 8 yds.); Multiple Dozer Units with single blade; Paving Machine (asphalt and concrete); Quad-Track or similar equipment; Rollerman (finishing asphalt pavement); Roto Mill (pavement grinder); Scrapers, all, rubber-tired; Screed Operator; Shovel(under 3 yds.); Tractors (D-6 & equivalent & over); Trenching Machines (7 ft. depth & over); Tug Boat Operator Vactor guzzler, super sucker

GROUP 7: Backhoe (over 110,000 gw); Backhoes & Hoe Ram (3 yds & over); Blade (finish & bluetop) Automatic, CMI, ABC, Finish Athey & Huber & similar when used as automatic; Cableway Operators; Concrete Cleaning/Decontamination machine operator; Cranes (over 45 tons to but not including 85 tons), all attachments including clamshell and dragline; Derricks & Stiffleys (65 tons & over); Elevating Belt (Holland type); Heavy equipment robotics operator; Loader (360 degrees revolving Koehring Scooper or similar); Loaders (overhead & front-end, over 8 yds. to 10 yds.); Rubber-tired Scrapers (multiple engine with three or more scrapers); Shovels (3 yds. & over); Whirleys & Hammerheads, ALL

GROUP 8: Cranes (85 tons and over, and all climbing, overhead,rail and tower), all attachments including clamshell, dragline; Loaders (overhead and front-end, 10 yards and over);

Helicopter Pilot

BOOM PAY: (All Cranes, Including Tower)

180' to 250' \$.30 over scale

Over 250' \$.60 over scale

NOTE: In computing the length of the boom on Tower Cranes, they shall be measured from the base of the Tower to the point of the boom.

HAZMAT: Anyone working on HAZMAT jobs, working with supplied air shall receive \$1.00 an hour above classification.

ENGI0370G 06/01/2002

Rates Fringes
ADAMS, ASOTIN, BENTON, CHELAN (EAST OF THE 120TH MERIDIAN),

COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN (EAST OF THE 120TH MERIDIAN), PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN AND YAKIMA (EAST OF THE 120TH MERIDIAN) COUNTIES

WORK PERFORMED ON HYDRAULIC DREDGES

GROUP 1:	24.73	6.27
GROUP 2:	25.10	6.27
GROUP 3:	25.13	6.27
GROUP 4:	25.52	6.27
GROUP 5:	24.73	6.27

GROUP 1: Assistant Mate (Deckhand) and Oiler

GROUP 2: Assistant Engineer (Electric, Diesel, Steam, or Booster Pump); Mates and Boatmen

GROUP 3: Engineer Welder

GROUP 4: Leverman, Hydraulic

GROUP 5: Maintenance

HEAVY WAGE RATES APPLIES TO CLAM SHELL DREDGE, HOE AND DIPPER, SHOVELS AND SHOVEL ATTACHMENTS, CRANES AND BULLDOZERS.

ENGI0612A 06/01/2002

Rates Fringes
LEWIS, PIERCE, PACIFIC (THAT PORTION WHICH LIES NORTH OF A PARALLEL LINE EXTENDED WEST FROM THE NORTHERN BOUNDARY OF WAHKAUKUM COUNTY TO THE SEA IN THE STATE OF WASHINGTON) AND THURSTON COUNTIES

PROJECTS:

CATEGORY A PROJECTS (excludes Category B projects, as shown below)

POWER EQUIPMENT OPERATORS:

ZONE 1 (0-25 radius miles):

GROUP 1AAA	31.14	8.40
GROUP 1AA	30.64	8.40
GROUP 1A	30.14	8.40

GROUP 1	29.64	8.40
GROUP 2	29.20	8.40
GROUP 3	28.94	8.40
GROUP 4	26.74	8.40

ZONE 2 (26-45 radius miles) - Add \$.70 to Zone 1 rates

ZONE 3 (Over 45 radius miles) - Add \$1.00 to Zone 1 rates

BASEPOINTS: Tacoma, Olympia, and Centralia

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1AAA - Cranes-300 tons, or 300 ft of boom (including jib with attachments)

GROUP 1AA - Cranes 200 tons to 300 tons, or 250 ft of boom (including jib with attachments); Tower crane over 175 ft in

height, base to boom

GROUP 1A - Crane 100 tons thru 199 tons, or 150 of boom (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Shovel, excavator, backhoes-6 yds and over with attachments

GROUP 1 - Cableways; Cranes-45 tons thru 99 tons, under 150 ft of boom (including jib with attachments); Crane-overhead, bridge type - 45 tons thru 99 tons; Excavator, shovel, backhoes over 3 yards and under 6 yards; hard tail end dump articulating off-road equipment 45 yards and over; loader-overhead 6 yards to, but not including 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9, HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self-propelled-45 yds and over; Slipform pavers; Transporters-all track or truck type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-concrete; Bump cutter; Cranes-20 tons through 44 tons with attachments; Crane-overhead, bridge type-20 tons thru 44 tons; Chipper, Concrete Pump-truck mounted with boom attachment; Crushers; Deck Engineer/Deck Winches (power); Drilling machine; Excavator, shovel, backhoe-3yards and under; Finishing machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Horizontal/directional drill operator; Loaders, overhead under 6 yds.; Loaders, plant feed; Locomotive-all; Mechanics-all; Mixers, asphalt plant; Motor patrol graders-finishing; Piledriver (other than crane mount); Roto-mill, roto grinder; screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self propelled, hard tail end dump, articulating off-road equipment under 45 yds.; Subgrader trimmer; Tractors, backhoes over 75 hp.; Transfer material service machine-shuttle buggy, Blaw Knox-Roadtec; Truck Crane Oiler/driver-100 tons and over, Truck Mount Portable Conveyor; Yo Yo Pay dozer.

GROUP 3 - Conveyors; Cranes-thru 19 tons with attachments; Cranes-A-frame over 10 tons; Drill Oilers-Augur type, truck or

crane mount; Dozers-D-9 and under; Forklifts-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/Boom Trucks-over 10 tons; Loaders-elevating type, belt; Motor patrol grader-nonfinishing; Plant Oiler-Asphalt, Crusher; Pumps, Concrete; Roller, plant mix or multi-lift materials; Saws-concrete; Scrapers-Concrete and Carry all; Trenching machines; Truck Crane Oiler/Driver-under 100 tons; Tractor, backhoe-under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Crane-A-Frame, 10 tons and under; Elevator and manlift-permanent and shaft type; Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts, boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole Digger-mechanical; Power plant;

Pumps-Water; Roller-other than Plant Mix; Wheel Tractors, Farmall type; Shotcrete/Gunite Equipment Operator

CATEGORY B PROJECTS - 95% of the basic hourly rate for each group plus full fringe benefits applicable to Category A projects shall apply to the following projects: Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and structures whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000

WORK PERFORMED ON HYDRAULIC DREDGES:

Total Project cost \$300,000 and over

GROUP 1	28.38	8.40
GROUP 2	28.48	8.40
GROUP 3	28.82	8.40
GROUP 4	28.87	8.40
GROUP 5	30.26	8.40
GROUP 6	28.38	8.40

GROUP 1: Assistant Mate (Deckhand)

GROUP 2: Oiler

GROUP 3: Assistant Engineer (Electric, Diesel, Steam or Booster Pump); Mates and Boatmen

GROUP 4: Craneman, Engineer Welder

GROUP 5: Leverman, Hydraulic

GROUP 6: Maintenance

Total Project Cost under \$300,000

GROUP 1	26.96	8.40
GROUP 2	27.06	8.40
GROUP 3	27.38	8.40
GROUP 4	27.43	8.40
GROUP 5	28.75	8.40
GROUP 6	26.96	8.40

GROUP 1: Assistant Mate (Deckhand)
 GROUP 2: Oiler
 GROUP 3: Assistant Engineer (Electric, Diesel, Steam or
 Booster Pump); Mates and Boatmen
 GROUP 4: Craneman, Engineer Welder
 GROUP 5: Leverman, Hydraulic
 GROUP 6: Maintenance

HEAVY WAGE RATES APPLIES TO CLAM SHEEL DREDGE, HOE AND DIPPER,
 SHOVELS AND SHOVEL ATTACHMENTS, CRANES AND BULLDOZERS

HANDLING OF HAZARDOUS WASTE MATERIALS

H-1 - When not outfitted with protective clothing of
 level D equipment - Base wage rate
 H-2 - Class "C" Suit - Base wage rate + \$.25 per hour
 H-3 - Class "B" Suit - Base wage rate + \$.50 per hour
 H-4 - Class "A" Suit - Base wage rate +\$.75 per hour

 ENGI0701D 01/01/2003

Rates Fringes
 CLARK, COWLITZ, KLINKITAT, PACIFIC (SOUTH), SKAMANIA, AND
 WAHIAKUM COUNTIES

POWER EQUIPMENT OPERATORS (See Footnote A)

ZONE 1:

GROUP 1	29.30	8.95
GROUP 1A	30.77	8.95
GROUP 1B	32.23	8.95
GROUP 2	28.07	8.95
GROUP 3	27.31	8.95
GROUP 4	26.79	8.95
GROUP 5	26.19	8.95
GROUP 6	23.84	8.95

Zone Differential (add to Zone 1 rates):

Zone 2 - \$1.50

Zone 3 - 3.00

For the following metropolitan counties: MULTNOMAH; CLACKAMAS;
 MARION; WASHINGTON; YAMHILL; AND COLUMBIA; CLARK; AND COWLITZ
 COUNTY, WASHINGTON WITH MODIFICATIONS AS INDICATED:

All jobs or projects located in Multnomah, Clackamas and Marion
 Counties, West of the western boundary of Mt. Hood National
 Forest and West of Mile Post 30 on Interstate 84 and West of Mile
 Post 30 on State Highway 26 and West of Mile Post 30 on Highway
 22 and all jobs or projects located in Yamhill County, Washington
 County and Columbia County and all jobs or projects located in
 Clark & Cowlitz County, Washington except that portion of Cowlitz
 County in the Mt. St. Helens "Blast Zone" shall receive Zone I
 pay for all classifications.

All jobs or projects located in the area outside the identified

boundary above, but less than 50 miles from the Portland City Hall shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the Portland City Hall, but outside the identified border above, shall receive Zone III pay for all classifications.

For the following cities: ALBANY; BEND; COOS BAY; EUGENE; GRANTS PASS; KLAMATH FALLS; MEDFORD; ROSEBURG

All jobs or projects located within 30 miles of the respective city hall of the above mentioned cities shall receive Zone I pay for all classifications.

All jobs or projects located more than 30 miles and less than 50 miles from the respective city hall of the above mentioned cities shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the respective city hall of the above mentioned cities shall receive Zone III pay for all classifications.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: CONCRETE: Batch Plant and/or Wet Mix Operator, three units or more; CRANE: Helicopter Operator, when used in erecting work; Whirley Operator, 90 ton and over; LATTICE BOOM CRANE: Operator 200 tons through 299 tons, and/or over 200 feet boom; HYDRAULIC CRANE: Hydraulic Crane Operator 90 tons through 199 tons with luffing or tower attachments; FLOATING EQUIPMENT: Floating Crane, 150 ton but less than 250 ton

GROUP 1A: HYDRAULIC CRANE: Hydraulic Operator, 200 tons and over (with luffing or tower attachment); LATTICE BOOM CRANE: Operator, 200 tons through 299 tons, with over 200 feet boom; FLOATING EQUIPMENT: Floating Crane 250 ton and over

GROUP 1B: LATTICE BOOM CRANE: Operator, 300 tons through 399 tons with over 200 feet boom; Operator 400 tons and over; FLOATING EQUIPMENT: Floating Crane 350 ton and over

GROUP 2: ASPHALT: Asphalt Plant Operator (any type); Roto Mill, pavement profiler, operator, 6 foot lateral cut and over; BLADE: Auto Grader or "Trimmer" (Grade Checker required); Blade Operator, Robotic; BULLDOZERS: Bulldozer operator over 120,000 lbs and above; Bulldozer operator, twin engine; Bulldozer Operator, tandem, quadnine, D10, D11, and similar type; Bulldozere Robotic Equipment (any type; CONCRETE: Batch Plant and/or Wet Mix Operator, one and two drum; Automatic Concrete Slip Form Paver Operator; Concrete Canal Line Operator; Concrete Profiler, Diamond Head; CRANE: Cableway Operator, 25 tons and over; HYDRAULIC CRANE: Hydraulic crane operator 90 tons through 199 tons (with luffing or tower attachment); TOWER/WHIRLEY OPERATOR: Tower Crane Operator; Whirley Operator, under 90 tons; LATTICE BOOM CRANE: 90 through 199 tons and/or 150 to 200 feet boom; CRUSHER: Crusher

Plant Operator; FLOATING EQUIPMENT: Floating Clamshell, etc.operator, 3 cu. yds. and over; Floating Crane (derrick barge) Operator, 30 tons but less than 150 tons; LOADERS: Loader operator, 120,000 lbs. and above; REMOTE CONTROL: Remote controlled earth-moving equipment; RUBBER-TIRED SCRAPERS: Rubber-tired scraper operator, with tandem scrapers, multi-engine; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER OPERATOR: Shovel, Dragline, Clamshell, operator 5 cu. yds and over; TRENCHING MACHINE: Wheel Excavator, under 750 cu. yds. per hour (Grade Oiler required); Canal Trimmer (Grade Oiler required); Wheel Excavator, over 750 cu. yds. per hour; Band Wagon (in conjunction with wheel excavator); UNDERWATER EQUIPMENT: Underwater Equipment Operator, remote or otherwise; HYDRAULIC HOES-EXCAVATOR: Excavator over 130,000 lbs.

GROUP 3: BULLDOZERS: Bulldozer operator, over 70,000 lbs. up to

and including 120,000 lbs.; HYDRAULIC CRANE: Hydraulic crane operator, 50 tons through 89 tons (with luffing or tower attachment); LATTICE BOOM CRANES: Lattice Boom Crane-50 through 89 tons (and less than 150 feet boom); FORKLIFT: Rock Hound Operator; HYDRAULIC HOES-EXCAVATOR: excavator over 80,000 lbs. through 130,000 lbs.; LOADERS: Loader operator 60,000 and less than 120,000; RUBBER-TIRED SCRAPERS: Scraper Operator, with tandem scrapers; Self-loading, paddle wheel, auger type, finish and/or 2 or more units; SHOVEL, DRAGLINE, CLAMSHELL,SKOOPER OPERATOR: Shovel, Dragline, Clamshell operators 3 cu. yds. but less than 5 cu yds.

GROUP 4: ASPHALT: Screed Operator; Asphalt Paver operator (screeman required); BLADE: Blade operator; Blade operator, finish; Blade operator, externally controlled by electronic, mechanical hydraulic means; Blade operator, multi-engine; BULLDOZERS: Bulldozer Operator over 20,000 lbs and more than 100 horse up to 70,000 lbs; Drill Cat Operator; Side-boom Operator; Cable-Plow Operator (any type); CLEARING: Log Skidders; Chippers; Incinerator; Stump Splitter (loader mounted or similar type); Stump Grinder (loader mounted or similar type; Tub Grinder; Land Clearing Machine (Track mounted forestry mowing & grinding machine); Hydro Axe (loader mounted or similar type); COMPACTORS SELF-PROPELLED: Compactor Operator, with blade; Compactor Operator, multi-engine; Compactor Operator, robotic; CONCRETE: Mixer Mobile Operator; Screed Operator; Concrete Cooling Machine Operator; Concrete Paving Road Mixer; Concrete Breaker; Reinforced Tank Banding Machine (K-17 or similar types); Laser Screed; CRANE: Chicago boom and similar types; Lift Slab Machine Operator; Boom type lifting device, 5 ton capacity or less; Hoist Operator, two (2) drum; Hoist Operator, three (3) or more drums; Derrick Operator, under 100 ton; Hoist Operator, stiff leg, guy derrick or similar type, 50 ton and over; Cableway Operator up to twenty (25) ton; Bridge Crane Operator, Locomotive, Gantry, Overhead; Cherry Picker or similar type crane; Carry Deck Operator; Hydraulic Crane Operator, under 50 tons; LATTICE BOOM CRANE OPERATOR: Lattice Boom Crane Operator, under 50 tons; CRUSHER: Generator Operator; Diesel-Electric Engineer; Grizzly Operator; Drill Doctor; Boring Machine Operator; Driller-Percussion, Diamond, Core, Cable, Rotary and

similar type; Cat Drill (John Henry); Directional Drill Operator over 20,000 lbs pullback; FLOATING EQUIPMENT: Diesel-electric Engineer; Jack Operator, elevating barges, Barge Operator, self-unloading; Piledriver Operator (not crane type) (Deckhand required); Floating Clamshell, etc. Operator, under 3 cu. yds. (Fireman or Diesel-Electric Engineer required); Floating Crane (derrick barge) Operator, less than 30 tons; GENERATORS: Generator Operator; Diesel-electric Engineer; GUARDRAIL EQUIPMENT: Guardrail Punch Operator (all types); Guardrail Auger Operator (all types); Combination Guardrail machines, i.e., punch auger, etc.; HEATING PLANT: Surface Heater and Planer Operator; HYDRAULIC HOES EXCAVATOR: Robotic Hydraulic backhoe operator, track and wheel type up to and including 20,000 lbs. with any or all attachments; Excavator Operator over 20,000 lbs through 80,000 lbs.; LOADERS: Belt Loaders, Kolman and Ko Cal types; Loaders Operator, front end and overhead, 25,000 lbs and less

than 60,000 lbs; Elevating Grader Operator by Tractor operator, Sierra, Euclid or similar types; PILEDRIVERS: Hammer Operator; Piledriver Operator (not crane type); PIPELINE, SEWER WATER: Pipe Cleaning Machine Operator; Pipe Doping Machine Operator; Pipe Bending Machine Operator; Pipe Wrapping Machine Operator; Boring Machine Operator; Back Filling Machine Operator; REMOTE CONTROL: Concrete Cleaning Decontamination Machine Operator; Ultra High Pressure Water Jet Cutting Tool System Operator/Mechanic; Vacuum Blasting Machine Operator/mechanic; REPAIRMEN, HEAVY DUTY: Diesel Electric Engineer (Plant or Floating); Bolt Threading Machine operator; Drill Doctor (Bit Grinder); H.D. Mechanic; Machine Tool Operator; RUBBER-TIRED SCRAPERS: Rubber-tired Scraper Operator, single engine, single scraper; Self-loading, paddle wheel, auger type under 15 cu. yds.; Rubber-tired Scraper Operator, twin engine; Rubber-tired Scraper Operator, with push-ull attachments; Self Loading, paddle wheel, auger type 15 cu. yds. and over, single engine; Water pulls, water wagons; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER OPERATOR: Diesel Electric Engineer; Stationary Drag Scraper Operator; Shovel, Dragline, Clamshell, Operator under 3 cy yds.; Grade-all Operator; SURFACE (BASE) MATERIAL: Blade mounted spreaders, Ulrich and similar types; TRACTOR-RUBBERED TIRED: Tractor operator, rubber-tired, over 50 hp flywheel; Tractor operator, with boom attachment; Rubber-tired dozers and pushers (Michigan, Cat, Hough type); Skip Loader, Drag Box; TRENCHING MACHINE: Trenching Machine operator, digging capacity over 3 ft depth; Back filling machine operator; TUNNEL: Mucking machine operator

GROUP 5: ASPHALT: Extrusion Machine Operator; Roller Operator (any asphalt mix); Asphalt Burner and Reconditioner Operator (any type); Roto-Mill, pavement profiler, ground man; BULLDOZERS: Bulldozer operator, 20,000 lbs. or less or 100 horse or less; COMPRESSORS: Compressor Operator (any power), over 1,250 cu. ft. total capacity; COMPACTORS: Compactor Operator, including vibratory; Wagner Pactor Operator or similar type (without blade); CONCRETE: Combination mixer and Compressor Operator, gunite work; Concrete Batch Plant Quality Control Operator; Belcrete Operator; Pumpcrete Operator (any type); Pavement Grinder and/or Grooving Machine Operator (riding type); Cement Pump Operator, Fuller-Kenyon and similar; Concrete Pump Operator;

Grouting Machine Operator; Concrete mixer operator, single drum, under (5) bag capacity; Cast in place pipe laying machine; maginnis Internal Full slab vibrator operator; Concrete finishing mahine operator, Clary, Johnson, Bidwell, Burgess Bridge deck or similar type; Curb Machine Operator, mechanical Berm, Curb and/or Curb and Gutter; Concrete Joint Machine Operator; Concrete Planer Operator; Tower Mobile Operator; Power Jumbo Operator setting slip forms in tunnels; Slip Form Pumps, power driven hydraulic lifting device for concrete forms; Concrete Paving Machine Operator; Concrete Finishing Machine Operator; Concrete Spreader Operator; CRANE: Helicopter Hoist Operator; Hoist Operator, single drum; Elevator Operator; A-frame Truck Operator, Double drum; Boom Truck Operator; HYDRAULIC CRANE OPERATOR: Hydraulic Boom Truck, Pittman; DRILLING: Churm Drill and Earth Boring Machine Operator; Vacuum Truck; Directional Drill Operator over 20,000 lbs pullback; FLOATING EQUIPMENT:

Fireman; FORKLIFT: Fork Lift, over 10 ton and/or robotic; HYDRAULIC HOES EXCAVATORS: Hydraulic Backhoe Operator, wheel type (Ford, John Deere, Case type); Hydraulic Backhoe Operator track type up to and including 20,000 lbs.; LOADERS: Loaders, rubber-tired type, less than 25,000 lbs; Elevating Grader Operator, Tractor Towed requiring Operator or Grader; Elevating loader operator, Athey and similar types; OILERS: Service oiler (Greaser); PIPELINE-SEWER WATER: Hydra hammer or simialr types; Pavement Breaker Operator; PUMPS: Pump Operator, more than 5 (any size); Pot Rammer Operator; RAILROAD EQUIPMENT: Locomotive Operator, under 40 tons; Ballast Regulator Operator; Ballast Tamper Multi-Purpose Operator; Track Liner Operator; Tie Spacer Operator; Shuttle Car Operator; Locomotive Operator, 40 tons and over; MATERIAL HAULRS: Cat wagon DJB's Volvo similar types; Conveyored material hauler; SURFACING (BASE) MATERIAL: Rock Spreaders, self-propelled; Pulva-mixer or similar types; Chiip Spreading machine operator; Lime spreading operator, construction job siter; SWEEPERS: Sweeper operator (Wayne type) self-propelled construction job site; TRACTOR-RUBBER TIRED: Tractor operator, rubber-tired, 50 hp flywheel and under; Trenching machine operator, maximum digging capacity 3 ft depth; TUNNEL: Dinkey GROUP 6: ASPHALT: Plant Oiler; Plant Fireman; Pugmill Operator (any type); Truck mounted asphalt spreader, with screed; COMPRESSORS: Compressor Operator (any power), under 1,250 cu. ft. total capacity; CONCRETE: Plant Oiler, Assistant Conveyor Operator; Conveyor Operator; Mixer Box Operator (C.T.B., dry batch, etc.); Cement Hog Operator; Concrete Saw Operator; Concrete Curing Machine Operator (riding type); Wire Mat or Brooming Machine Operator; CRANE: Oiler; Fireman, all equipment; Truck Crane Oiler Driver; A-frame Truck Operator, single drum; Tugger or Coffin Type Hoist Operator; CRUSHER: Crusher Oiler; Crusher Feeder; CRUSHER: Crusher oiler; Crusher feeder; DRILLING: Drill Tender; Auger Oiler; FLOATING EQUIPMENT: Deckhand; Boatman; FORKLIFT: Self-propelled Scaffolding Operator, construction job site (exclduing working platform); Fork Lift or Lumber Stacker Operator, construction job site; Ross Carrier Operator, construction job site; Lull Hi-Lift Operator or Similar Type; GUARDRAIL EQUIPMENT: Oiler; Auger Oiler; Oiler, combination guardrail machines; Guardrail Punch Oiler; HEATING PLANT: Temporary Heating Plant Operator; LOADERS:

Bobcat, skid steer (less than 1 cu yd.); Bucket Elevator Loader Operator, BarberGreene and similar types; OILERS: Oiler; Guardrail Punch Oiler; Truck Crane Oiler-Driver; Auger Oiler; Grade Oiler, required to check grade; Grade Checker; Rigger; PIPELINE-SEWER WATER: Tar Pot Fireman; Tar Pot Fireman (power agitated); PUMPS: Pump Operator (any power); Hydrostatic Pump Operator; RAILROAD EQUIPMENT: Brakeman; Oiler; Switchman; Motorman; Ballast Jack Tamper Operator; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER, ETC. OPERATOR: Oiler, Grade Oiler (required to check grade); Grade Checker; Fireman; SWEEPER: Broom operator, self propelled, construction job site; SURFACING (BASE) MATERIAL: Roller Operator, grading of base rock (not asphalt); Tamping Machine operator, mechanical, self-propelled; Hydrographic Seeder Machine Operator; TRENCHING MACHINE: Oiler; Grade Oiler; TUNNEL: Conveyor operator; Air filtration equipment operator

ENGI0701E 06/01/2002

CLARK, COWLITZ, KLICKITAT, PACIFIC (SOUTH), SKAMANIA,
AND WAHIAKUM COUNTIES

DREDGING:

	Rates	Fringes
ZONE A		
LEVERMAN, HYDRAULIC	32.43	8.50
LEVERMAN, DIPPER, FLOATING CLAMSHELL	30.25	8.50
ASSISTANT ENGINEER	29.25	8.50
TENDERMAN	28.44	8.50
ASSISTANT MATE	26.58	8.50
ZONE B		
LEVERMAN, HYDRAULIC	34.43	8.50
LEVERMAN, DIPPER, FLOATING CLAMSHELL	32.25	8.50
ASSISTANT ENGINEER	31.25	8.50
TENDERMAN	30.44	8.50
ASSISTANT MATE	28.58	8.50
ZONE C		
LEVERMAN, HYDRAULIC	35.43	8.50
LEVERMAN, DIPPER, FLOATING CLAMSHELL	33.25	8.50
ASSISTANT ENGINEER	32.25	8.50
TENDERMAN	31.44	8.50
ASSISTANT MATE	29.58	8.50

ZONE DESCRIPTION FOR DREDGING:

ZONE A - All jobs or projects located within 30 road miles of Portland City Hall.

ZONE B - Over 30-50 road miles from Portland City Hall.

ZONE C - Over 50 road miles from Portland City Hall.

*All jobs or projects shall be computed from the city hall by the shortest route to the geographical center of the project.

IRON0014F 02/01/2003

	Rates	Fringes
ADAMS, ASOTIN, BENTON, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND ORIELLE, SPOKANE, STEVENS, WALLA WALLA AND WHITMAN COUNTIES		
IRONWORKERS	25.52	11.80

IRON0029I 07/01/2002

	Rates	Fringes
CLARK, COWLITZ, KLUCKITAT, PACIFIC, SKAMANIA, AND WAHKAUKUM COUNTIES		
IRONWORKERS	26.97	11.80

IRON0086B 07/01/2002

	Rates	Fringes
YAKIMA, KITTITAS AND CHELAN COUNTIES		
IRONWORKERS	26.72	11.80

IRON0086E 07/01/2002

	Rates	Fringes
CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SKAGIT, SNOHOMISH, THURSTON, AND WHATCOM COUNTIES		
IRONWORKERS	27.22	11.80

LAB00001D 06/01/2002

	Rates	Fringes
CHELAN, DOUGLAS (WEST OF THE 120TH MERIDIAN), KITTITAS AND YAKIMA COUNTIES		
LABORERS:		
ZONE 1:		
GROUP 1	14.79	6.20
GROUP 2	17.11	6.20
GROUP 3	18.83	6.20
GROUP 4	19.31	6.20
GROUP 5	19.67	6.20

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$.70

ZONE 3 - \$1.00

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE,
AND YAKIMA

ZONE 1 - Projects within 25 radius miles of the respective city
hall

ZONE 2 - More than 25 but less than 45 radius miles from the

respective city hall
ZONE 3 - More than 45 radius miles from the respective city hall

CALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS,
MASON, PACIFIC (NORTH OF STRAIGHT LINE MADE BY EXTENDING THE
NORTH BOUNDARY WAHAKIUM COUNTY WEST TO THE PACIFIC OCEAN),
PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM
COUNTIES

LABORERS:

ZONE 1:

GROUP 1	17.71	6.20
GROUP 2	20.03	6.20
GROUP 3	24.71	6.20
GROUP 4	25.19	6.20
GROUP 5	25.55	6.20

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$.70

ZONE 3 - \$1.00

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT,
SEATTLE, KENT, TACOMA, OLYMPIA,
CENTRALIA, ABERDEEN, SHELTON, PT.
TOWNSEND, PT. ANGELES, AND BREMERTON

ZONE 1 - Projects within 25 radius miles of the respective city
hall

ZONE 2 - More than 25 but less than 45 radius miles from the
respective city hall

ZONE 3 - More than 45 radius miles from the respective city hall

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window
Washer/Cleaner (detail clean-up, such as but not limited to
cleaning floors, ceilings, walls, windows, etc., prior to final
acceptance by the owner)

GROUP 2: Batch Weighman; Crusher Feeder; Fence Laborer;
Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating
Screed; Asbestos Abatement Laborer; Ballast Regulator Machine;
Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement
Finisher Tender; Change House or Dry Shack; Chipping Gun (under
30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete
Form Stripper; Curing Laborer; Demolition (wrecking and moving
including charred material); Ditch Digger; Dump Person; Fine
Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout
Machine Tender; Grinders; Guardrail Erector; Hazardous Waste
Worker (Level C); Maintenance Person; Material Yard Person; Pot
Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer;
Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job
site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.); Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete Saw Operator; Drill Operator (hydraulic, diamond, aiartrac); Faller and Bucker Chain Saw; Grade Checker and Transit Person; Groutmen (pressure) including post tension beams; Hazardous Waste Worker (Level B); High Scaler; Jackhammer; Laserbeam Operator; Manhole Builder-Mudman; Mortarman and Hodcarrier; Nozzleman (concrete pump, green cutter when using combination of high pressure air and water on concrete and rock, sandblast, gunite, shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power; Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20'); Spreader

(concrete); Tamper and Similar electric, air and glas operated tool; Timber Person-sewer (lagger shorer and cribber); Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Miner; Powderman; Re-Timberman; Hazardous Waste Worker (Level A).

LAB00238E 06/01/2002

	Rates	Fringes
ADAMS, ASOTIN, BENTON, COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND OREILLE, STEVENS, SPOKANE, WALLA WALLA AND WHITMAN COUNTIES		

LABORERS:

ZONE 1:

GROUP 1	17.66	5.50
GROUP 2	19.76	5.50
GROUP 3	20.03	5.50
GROUP 4	20.30	5.50
GROUP 5	20.58	5.50
GROUP 6	21.95	5.50

Zone Differential (Add to Zone 1 rate): \$2.00

BASE POINTS: Spokane, Moses Lake, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office.

Zone 2: 45 radius miles and over from the main post office.

LABORERS CLASSIFICATIONS

GROUP 1: Flagman; Landscape Laborer; Scaleman; Traffic Control Maintenance Laborer (to include erection and maintenance of barricades, signs and relief of flagperson); Window Washer/Cleaner (detail cleanup, such as, but not limited to cleaning floors, ceilings, walls, windows, etc. prior to final acceptance by the owner)

GROUP 2: Asbestos Abatement Worker; Brush Hog Feeder; Carpenter Tender; Cement Handler; Clean-up Laborer; Concrete Crewman (to

include stripping of forms, hand operating jacks on slip form construction, application of concrete curing compounds, pumpcrete machine, signaling, handling the nozzle of squeezecrete or similar machine, 6 inches and smaller); Confined Space Attendant; Concrete Signalman; Crusher Feeder; Demolition (to include clean-up, burning, loading, wrecking and salvage of all material); Dumpman; Fence Erector; Firewatch; Form Cleaning Machine Feeder, Stacker; General Laborer; Grout Machine Header Tender; Guard Rail (to include guard rails, guide and reference posts, sign posts, and right-of-way markers); Hazardous Waste Worker, Level D (no respirator is used and skin protection is minimal); Miner, Class "A" (to include all bull gang, concrete crewman, dumpman and pumpcrete crewman, including distributing pipe, assembly &

dismantle, and nipper); Nipper; Riprap Man; Sandblast Tailhoseman; Scaffold Erector (wood or steel); Stake Jumper; Structural Mover (to include separating foundation, preparation, cribbing, shoring, jacking and unloading of structures); Tailhoseman (water nozzle); Timber Bucker and Faller (by hand); Track Laborer (RR); Truck Loader; Well-Point Man; All Other Work Classifications Not Specially Listed Shall Be Classified As General Laborer

GROUP 3: Asphalt Raker; Asphalt Roller, walking; Cement Finisher Tender; Concrete Saw, walking; Demolition Torch; Dope Pot Firemen, non-mechanical; Driller Tender (when required to move and position machine); Form Setter, Paving; Grade Checker using level; Hazardous Waste Worker, Level C (uses a chemical "splash suit" and air purifying respirator); Jackhammer Operator; Miner, Class "B" (to include brakeman, finisher, vibrator, form setter); Nozzleman (to include squeeze and flo-crete nozzle); Nozzleman, water, air or steam; Pavement Breaker (under 90 lbs.); Pipelayer, corrugated metal culvert; Pipelayer, multi-plate; Pot Tender; Power Buggy Operator; Power Tool Operator, gas, electric, pneumatic; Railroad Equipment, power driven, except dual mobile power spiker or puller; Railroad Power Spiker or Puller, dual mobile; Rodder and Spreader; Tamper (to include operation of Barco, Essex and similar tampers); Trencher, Shawnee; Tugger Operator; Wagon Drills; Water Pipe Liner; Wheelbarrow (power driven)

GROUP 4: Air and Hydraulic Track Drill; Brush Machine (to include horizontal construction joint cleanup brush machine, power propelled); Caisson Worker, free air; Chain Saw Operator and Faller; Concrete Stack (to include laborers when laborers working on free standing concrete stacks for smoke or fume control above 40 feet high); Gunite (to include operation of machine and nozzle); Hazardous Waste Worker, Level B (uses same respirator protection as Level A. A supplied air line is provided in conjunction with a chemical "splash suit"); High Scaler; Laser Beam Operator (to include grade checker and elevation control); Miner, Class C (to include miner, nozzleman for concrete, laser beam operator and rigger on tunnels); Monitor Operator (air track or similar mounting); Mortar Mixer; Nozzleman (to include jet blasting nozzleman, over 1,200 lbs., jet blast machine power propelled, sandblast nozzle); Pavement Breaker (90 lbs. and over); Pipelayer (to include working topman, caulker,

collarman, jointer, mortarman, rigger, jacker, shorer, valve or meter installer); Pipewrapper; Plasterer Tender; Vibrators (all)

GROUP 5 - Drills with Dual Masts; Hazardous Waste Worker, Level A (utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line); Miner Class "D", (to include raise and shaft miner, laser beam operator on riases and shafts)

GROUP 6 - Powderman

LAB00238G 06/01/2002

	Rates	Fringes
COUNTIES EAST OF THE 120TH MERIDIAN: ADAMS, ASOTIN, BENTON, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND OREILLE, STEVENS, SPOKANE, WALLA WALLA, WHITMAN		

HOD CARRIERS	21.55	5.50
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LAB00335A 06/01/2002

	Rates	Fringes
CLARK, COWLITZ, KLUCKITAT, PACIFIC (SOUTH OF A STRAIGHT LINE MADE BY EXTENDING THE NORTH BOUNDARY LINE OF WAHIAKUM COUNTY WEST TO THE PACIFIC OCEAN), SKAMANIA AND WAHIAKUM COUNTIES		

ZONE 1:

LABORERS:

GROUP 1	23.43	6.15
GROUP 2	23.94	6.15
GROUP 3	24.33	6.15
GROUP 4	24.66	6.15
GROUP 5	21.26	6.15
GROUP 6	19.16	6.15
GROUP 7	16.40	6.15

Zone Differential (Add to Zone 1 rates):

Zone 2 \$ 0.65

Zone 3 - 1.15

Zone 4 - 1.70

Zone 5 - 2.75

BASE POINTS: GOLDENDALE, LONGVIEW, AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city all.

ZONE 2: More than 30 miles but less than 40 miles from the respective city hall.

ZONE 3: More than 40 miles but less than 50 miles from the respective city hall.

ZONE 4: More than 50 miles but less than 80 miles from the respective city hall.

ZONE 5: More than 80 miles from the respective city hall.

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Plant Laborers; Asphalt Spreaders; Batch Weighman; Broomers; Brush Burners and Cutters; Car and Truck Loaders; Carpenter Tender; Change-House Man or Dry Shack Man; Choker Setter; Clean-up Laborers; Curing, Concrete; Demolition, Wrecking and Moving Laborers; Dumpers, road oiling crew; Dumpmen (for grading crew); Elevator Feeders; Guard Rail, Median Rail Reference Post, Guide Post, Right of Way Marker; Fine Graders; Fire Watch; Form Strippers (not swinging stages); General Laborers; Hazardous Waste Worker; Leverman or Aggregate Spreader (Flaherty and similar types); Loading Spotters; Material Yard Man (including electrical); Pittsburgh Chipper Operator or Similar Types; Railroad Track Laborers; Ribbon Setters (including steel forms); Rip Rap Man (hand placed); Road Pump Tender; Sewer Labor;

Signalman; Skipman; Slopers; Spraymen; Stake Chaser; Stockpiler; Tie Back Shoring; Timber Faller and Bucker (hand labor); Toolroom Man (at job site); Tunnel Bullgang (above ground); Weight-Man-Crusher (aggregate when used)

GROUP 2: Applicator (including pot power tender for same), applying protective material by hand or nozzle on utility lines or storage tanks on project; Brush Cutters (power saw); Burners; Choker Splicer; Clary Power Spreader and similar types; Clean-up Nozzleman-Green Cutter (concrete, rock, etc.); Concrete Power Buggyman; Concrete Laborer; Crusher Feeder; Demolition and Wrecking Charred Materials; Gunitite Nozzleman Tender; Gunitite or Sand Blasting Pot Tender; Handlers or Mixers of all Materials of an irritating nature (including cement and lime); Tool Operators (includes but not limited to: Dry Pack Machine; Jackhammer; Chipping Guns; Paving Breakers); Pipe Doping and Wrapping; Post Hole Digger, air, gas or electric; Vibrating Screed; Tampers; Sand Blasting (Wet); Stake-Setter; Tunnel-Muckers, Brakemen, Concrete Crew, Bullgang (underground)

GROUP 3: Asbestos Removal; Bit Grinder; Drill Doctor; Drill Operators, air tracks, cat drills, wagon drills, rubber-mounted drills, and other similar types including at crusher plants; Gunitite Nozzleman; High Scalars, Strippers and Drillers (covers work in swinging stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping); Manhole Builder; Powdermen; Concrete Saw Operator; Powdermen; Power Saw Operators (Bucking and Falling); Pumpcrete Nozzlemen; Sand Blasting (Dry); Sewer Timberman; Track Liners, Anchor Machines, Ballast Regulators, Multiple Tampers, Power Jacks, Tugger Operator; Tunnel-Chuck Tenders, Nippers and Timbermen; Vibrator; Water Blaster

GROUP 4: Asphalt Raker; Concrete Saw Operator (walls); Concrete Nozzelman; Grade Checker; Pipelayer; Laser Beam (pipelaying)-applicable when employee assigned to move, set up, align; Laser Beam; Tunnel Miners; Motorman-Dinky Locomotive-Tunnel; Powderman-Tunnel; Shield Operator-Tunnel

GROUP 5: Traffic Flaggers

GROUP 6: Fence Builders

GROUP 7: Landscaping or Planting Laborers

LAB00335L 06/01/2002

Rates Fringes
CLARK, COWLITZ, KLUICKITAT, PACIFIC (SOUTH OF A STRAIGHT LINE MADE
BY EXTENDING THE NORTH BOUNDARY LINE OF WAHIAKUM COUNTY WEST TO
THE PACIFIC OCEAN), SKAMANIA AND WAHIAKUM COUNTIES

HOD CARRIERS 25.04 6.15

PAIN0005B 06/01/2002

Rates Fringes
STATEWIDE EXCEPT CLARK, COWLITZ, KLUICKITAT, PACIFIC (SOUTH),
SKAMANIA, AND WAHIAKUM COUNTIES

STRIPERS 21.25 6.40

PAIN0005D 07/01/2002

Rates Fringes
CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS,
MASON, PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM
COUNTIES

PAINTERS 23.27 5.36

PAIN0005G 07/01/2002

Rates Fringes
ADAMS, ASOTIN; BENTON AND FRANKLIN (EXCEPT HANFORD SITE); CHELAN,
COLUMBIA, DOUGLAS, FERRY, GARFIELD, GRANT, KITTITAS, LINCOLN,
OKANOGAN, PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA,
WHITMAN AND YAKIMA COUNTIES

PAINTERS*:

Brush, Roller, Striping,		
Steam-cleaning and Spray	18.97	5.32
Application of Cold Tar		
Products, Epoxies, Polyure		
thanes, Acids, Radiation		
Resistant Material, Water and		
Sandblasting, Bridges, Towers,		
Tanks, Stacks, Steeples	19.97	5.32
TV Radio, Electrical Transmission		
Towers	20.72	5.32
Lead Abatement, Asbestos		
Abatement	19.97	5.32

*\$.70 shall be paid over and above the basic wage rates listed
for work on swing stages and high work of over 30 feet.

PAIN0055C 07/01/2002

Rates Fringes

CLARK, COWLITZ, KLUICKITAT, PACIFIC, SKAMANIA, AND WAHKKIAKUM
COUNTIES

PAINTERS:

Brush & Roller	17.35	5.08
Spray and Sandblasting	17.95	5.08
High work - All work		
60 ft. or higher	18.10	5.08

PAIN0055L 06/01/2002

	Rates	Fringes
CLARK, COWLITZ, KLUICKITAT, SKAMANIA and WAHKKIAKUM COUNTIES		

PAINTERS:

HIGHWAY AND PARKING LOT		
STRIPER	23.36	5.75

PLAS0072E 06/01/2002

	Rates	Fringes
ADAMS, ASOTIN, BENTON, CHELAN, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT, KITTITAS, LINCOLN, OKANOGAN, PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN, AND YAKIMA COUNTIES		

ZONE 1:

CEMENT MASONS	22.33	5.98
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Zone Differential (Add to Zone 1
rate): Zone 2 - \$2.00

BASE POINTS: Spokane, Pasco, Moses Lake, Lewiston

Zone 1: 0 - 45 radius miles from the main post office

Zone 2: Over 45 radius miles from the main post office

PLAS0528A 12/01/2002

	Rates	Fringes
CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (NORTH), PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON, AND WHATCOM COUNTIES		

CEMENT MASON	28.05	9.84
COMPOSITION, COLOR MASTIC, TROWEL MACHINE, GRINDER, POWER TOOLS, GUNNITE NOZZLE	28.30	9.84

PLAS0555B 06/01/2002

	Rates	Fringes
CLARK, COWLITZ, KLUICKITAT, PACIFIC (SOUTH), SKAMANIA, AND WAHKKIAKUM COUNTIES		

ZONE 1:

CEMENT MASONS	24.24	9.70
COMPOSITION WORKERS AND POWER MACHINERY OPERATORS	24.68	9.70
CEMENT MASONS ON SUSPENDED, SWINGING AND/OR HANGING SCAFFOLD	24.68	9.70
CEMENT MASONS DOING BOTH COMPOSITION/POWER MACHINERY AND SUSPENDED/HANGING SCAFFOLD	25.13	9.70

Zone Differential (Add To Zone 1 Rates):

Zone 2 - \$0.65

Zone 3 - 1.15

Zone 4 - 1.70

Zone 5 - 2.75

BASE POINTS: BEND, CORVALLIS, EUGENE, LONGVIEW, MEDFORD,
PORTLAND, SALEM, THE DALLES, VANCOUVER

ZONE 1: Projects within 30 miles of the respective city hall

ZONE 2: More than 30 miles but less than 40 miles from the
respective city hall.

ZONE 3: More than 40 miles but less than 50 miles from the
respective city hall.

ZONE 4: More than 50 miles but less than 80 miles from the
respective city hall.

ZONE 5: More than 80 miles from the respective city hall

PLUM0032B 01/01/2003		
	Rates	Fringes
CLALLAM, KING AND JEFFERSON COUNTIES		
PLUMBERS AND PIPEFITTERS	34.18	12.68

PLUM0032D 06/01/2002		
	Rates	Fringes
CHELAN, KITTITAS (NORTHERN TIP), DOUGLAS (NORTH), AND OKANOGAN (NORTH) COUNTIES		
PLUMBERS AND PIPEFITTERS	26.13	10.23

PLUM0044C 06/01/2002		
	Rates	Fringes
ADAMS (NORTHERN PART), ASOTIN (CLARKSTON ONLY), FERRY (EASTERN PART), LINCOLN (EASTERN PART), PEND ORIELLE, STEVENS, SPOKANE, AND WHITMAN COUNTIES		
PLUMBERS AND PIPEFITTERS	26.16	9.89

PLUM0082A 08/01/2002		
	Rates	Fringes

CLARK (NORTHERN TIP INCLUDING WOODLAND), COWLITZ, GRAYS HARBOR,
LEWIS, MASON (EXCLUDING NE SECTION), PACIFIC, PIERCE
SKAMANIA, THURSTON AND WAHKIAKUM COUNTIES

PLUMBERS AND PIPEFITTERS	29.60	11.62
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PLUM0265C 08/01/2002

	Rates	Fringes
ISLAND, SKAGIT, SNOHOMISH, SAN JUAN AND WHATCOM COUNTIES		

PLUMBERS AND PIPEFITTERS	29.00	11.62
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PLUM0290K 10/01/2002

	Rates	Fringes
CLARK (ALL EXCLUDING NORTHERN TIP INCLUDING CITY OF WOODLAND)		

PLUMBERS AND PIPEFITTERS	31.73	12.93
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PLUM0598E 06/01/2002

	Rates	Fringes
ADAMS (SOUTHERN PART), ASOTIN (EXCLUDING THE CITY OF CLARKSTON), BENTON, COLUMBIA, DOUGLAS (EASTERN HALF), FERRY (WESTERN PART), FRANKLIN, GARFIELD, GRANT, KITTITAS (ALL BUT NORTHERN TIP), KLICKITAT, LINCOLN (WESTERN PART), OKANOGAN (EASTERN), WALLA WALLA AND YAKIMA COUNTIES		

PLUMBERS	29.85	12.59
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PLUM0631A 08/01/2002

	Rates	Fringes
MASON (NE SECTION), AND KITSAP COUNTIES		

PLUMBERS/PIPEFITTERS:

All new construction, additions,
and remodeling of commercial
building projects such as:
cocktail lounges and taverns,
professional buildings, medical
clinics, retail stores, hotels
and motels, restaurants and fast
food types, gasoline service
stations, and car washes where
the plumbing and mechanical cost
of the project is less than
\$100,000

19.20	4.58
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All other work where the plumbing
and mechanical cost of the project
is \$100,000 and over

27.84	11.62
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TEAM0037C 06/01/2002

Rates Fringes
CLARK, COWLITZ, KLUICKITAT, PACIFIC (South of a straight line made
by extending the north boundary line of Wahkiakum County west to
the Pacific Ocean), SKAMANIA, AND WAHIAKUM COUNTIES

TRUCK DRIVERS

ZONE 1:

GROUP 1	23.65	8.45
GROUP 2	23.77	8.45
GROUP 3	23.90	8.45
GROUP 4	24.16	8.45
GROUP 5	24.38	8.45
GROUP 6	24.54	8.45
GROUP 7	24.74	8.45

Zone Differential (Add to Zone 1 Rates):

Zone 2 - \$0.65
Zone 3 - 1.15
Zone 4 - 1.70
Zone 5 - 2.75

BASE POINTS: ASTORIA, THE DALLS, LONGVIEW AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city hall.
ZONE 2: More than 30 miles but less than 40 miles from the
respective city hall.
ZONE 3: More than 40 miles but less than 50 miles from the
respective city hall.
ZONE 4: More than 50 miles but less than 80 miles from the
respective city hall.
ZONE 5: More than 80 miles from the respective city hall.

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: A Frame or Hydra lift truck w/load bearing surface;
Articulated dump truck; Battery Rebuilders; Bus or Manhaul
Driver; Concrete Buggies (power operated); Concrete pump truck;
Dump Trucks, side, end and bottom dumps, including Semi Trucks
and Trains or combinations there of: up to and including 10 cu.
yds.; Lift Jitneys, Fork Lifts (all sizes in loading, unloading
and transporting material on job site); Loader and/or Leverman on
Concrete Dry Batch Plant (manually operated); Pilot Car;
Pickup truck; Solo Flat Bed and misc. Body Trucks, 0-10 tons;
Truck Tender; Truck Mechanic Tender; Water Wagons (rated
capacity) up to 3,000 gallons; Transit Mix and Wet or Dry Mix - 5
cu. yds. and under; Lubrication Man, Fuel Truck Driver, Tireman,
Wash Rack, Steam Cleaner or combinations; Team Driver; Slurry
Truck Driver or Leverman; Tireman

GROUP 2: Boom truck/hydra lift or retracting crane; Challenger;
Dumpsters or similar equipment all sizes; Dump Trucks/articulated
dumps 6 cu to 10 cu.; Flaherty Spreader Driver or Leverman;
Lowbed Equipment, Flat Bed Semi-trailer or doubles transporting
equipment or wet or dry materials; Lumber Carrier,
Driver-Straddle Carrier (used in loading, unloading and

transporting of materials on job site); Oil Distributor Driver or Leverman; Transit mix and wet or dry mix trucks: over 5 cu. yds. and including 7 cu. yds.; Vacuum trucks; Water truck/Wagons (rated capacity) over 3,000 to 5,000 gallons

GROUP 3: Ammonia nitrate distributor driver; Dump trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 10 cu. yds. and including 30 cu. yds. includes Articulated dump trucks; Selfpropelled street sweeper; Transit mix and wet or dry mix truck: over 7 cu yds. and including 11 cu yds.; Truck Mechanic-Welder-Body Repairman; Utility and cleanup truck; Water Wagons (rated capacity) over 5,000 to 10,000 gallons

GROUP 4: Asphalt burner; Dump Trucks, side, end and bottom dumps, including Semi-Trucks and Trains or combinations thereof: over 30 cu. yds. and including 50 cu. yds. includes articulated dump trucks; Fire guard; Transit Mix and Wet or Dry Mix Trucks, over 11 cu. yds. and including 15 cu. yds.; Water Wagon (rated capacity) over 10,000 gallons to 15,000 gallons

GROUP 5: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 50 cu. yds. and including 60 cu. yds. includes articulated dump trucks

GROUP 6: Bulk cement spreader w/o auger; Dry prebatch concrete mix trucks; Dump trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 60 cu. yds. and including 80 cu. yds., and includes articulated dump trucks; Skid truck

GROUP 7: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 80 cu. yds. and including 100 cu. yds., includes articulated dump trucks; Industrial lift truck (mechanical tailgate)

TEAM0174A 06/01/2002

	Rates	Fringes
CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM COUNTIES		

TRUCK DRIVERS;

ZONE A:

GROUP 1:	25.79	9.68
GROUP 2:	25.21	9.68
GROUP 3:	22.81	9.68
GROUP 4:	18.56	9.68
GROUP 5:	25.55	9.68

ZONE B (25-45 miles from center of listed cities*):

Add \$.70 per hour to Zone A rates.

ZONE C (over 45 miles from center of listed cities*):

Add \$1.00 per hour to Zone A rates.

*Zone pay will be calculated from the city center of the following listed cities:

BELLINGHAM	CENTRALIA	RAYMOND	OLYMPIA
EVERETT	SHELTON	ANACORTES	BELLEVUE
SEATTLE	PORT ANGELES	MT. VERNON	KENT
TACOMA	PORT TOWNSEND	ABERDEEN	BREMERTON

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 - "A-frame or Hydralift" trucks and Boom trucks or similar equipment when "A" frame or "Hydralift" and Boom truck or

similar equipment is used; Buggymobile; Bulk Cement Tanker; Dumpsters and similar equipment, Tournorockers, Tournowagon, Tournotrailer, Cat DW series, Terra Cobra, Le Tourneau, Westinghouse, Athye Wagon, Euclid Two and Four-Wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump Trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with 16 yards to 30 yards capacity: Over 30 yards \$.15 per hour additional for each 10 yard increment; Explosive Truck (field mix) and similar equipment; Hyster Operators (handling bulk loose aggregates); Lowbed and Heavy Duty Trailer; Road Oil Distributor Driver; Spreader, Flaherty Transit mix used exclusively in heavy construction; Water Wagon and Tank Truck-3,000 gallons and over capacity

GROUP 2 - Bulllifts, or similar equipment used in loading or unloading trucks, transporting materials on job site; Dumpsters, and similar equipment, Tournorockers, Tournowagon, Turnotrailer, Cat. D.W. Series, Terra Cobra, Le Tourneau, Westinghouse, Athye wagon, Euclid two and four-wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with less than 16 yards capacity; Flatbed (Dual Rear Axle); Grease Truck, Fuel Truck, Greaser, Battery Service Man and/or Tire Service Man; Leverman and loader at bunkers and batch plants; Oil tank transport; Scissor truck; Slurry Truck; Sno-Go and similar equipment; Swampers; Straddler Carrier (Ross, Hyster) and similar equipment; Team Driver; Tractor (small, rubber-tired)(when used within Teamster jurisdiction); Vacuum truck; Water Wagon and Tank trucks-less than 3,000 gallons capacity; Winch Truck; Wrecker, Tow truck and similar equipment

GROUP 3 - Flatbed (single rear axle); Pickup Sweeper; Pickup Truck. (Adjust Group 3 upward by \$2.00 per hour for onsite work only)

GROUP 4 - Escort or Pilot Car

GROUP 5 - Mechanic

HAZMAT PROJECTS

Anyone working on a HAZMAT job, where HAZMAT certification is

required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C: +\$.25 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B: +\$.50 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit."

LEVEL A: +\$.75 per hour - This level utilizes a fully-encapsulated suit with a self-contained breathing apparatus or a supplied air line.

TEAM0760C 06/01/2002

Rates Fringes
ADAMS, ASOTIN, BENTON, CHELAN, COLUMBIA, DOUGLAS, FERRY,
FRANKLIN, GARFIELD, GRANT KITTITAS, LINCOLN, OKANOGAN, PEND
OREILLE, SPOKANE, STEVENS, WALLA WALLA, AND WHITMAN COUNTIES

TRUCK DRIVERS

(ANYONE WORKING ON HAZMAT JOBS SEE FOOTNOTE A BELOW)

ZONE 1: (INCLUDES ALL OF YAKIMA COUNTY)

GROUP 1	17.73	8.50
GROUP 2	20.00	8.50
GROUP 3	20.50	8.50
GROUP 4	20.83	8.50
GROUP 5	20.94	8.50
GROUP 6	21.11	8.50
GROUP 7	21.64	8.50
GROUP 8	21.97	8.50

Zone Differential (Add to Zone 1
rate: Zone 2 - \$2.00)

BASE POINTS: Spokane, Moses Lake, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office.

Zone 2: 45 radius miles and over from the main post office

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Escort Driver or Pilot Car; Employee Haul; Power Boat Hauling Employees or Material

GROUP 2: Fish Truck; Flat Bed Truck; Fork Lift (3000 lbs. and under); Leverperson (loading trucks at bunkers); Trailer Mounted Hydro Seeder and Mulcher; Seeder & Mulcher; Stationary Fuel Operator; Tractor (small, rubber-tired, pulling trailer or similar equipment)

GROUP 3: Auto Crane (2000 lbs. capacity); Buggy Mobile & Similar; Bulk Cement Tanks & Spreader; Dumptor (6 yds. & under); Flat Bed Truck with Hydraulic System; Fork Lift (3001-16,000 lbs.); Fuel Truck Driver, Steamcleaner & Washer; Power Operated Sweeper; Rubber-tired Tunnel Jumbo; Scissors Truck; Slurry Truck

Driver; Straddle Carrier (Ross, Hyster, & similar); Tireperson; Transit Mixers & Truck Hauling Concrete (3 yd. to & including 6 yds.); Trucks, side, end, bottom & articulated end dump (3 yards to and including 6 yds.); Warehouseperson (to include shipping & receiving); Wrecker & Tow Truck

GROUP 4: A-Frame; Burner, Cutter, & Welder; Service Greaser; Trucks, side, end, bottom & articulated end dump (over 6 yards to and including 12 yds.); Truck Mounted Hydro Seeder; Warehouseperson; Water Tank truck (0-8,000 gallons)

GROUP 5: Dumptor (over 6 yds.); Lowboy (50 tons & under); Self-loading Roll Off; Semi-Truck & Trailer; Tractor with Steer Trailer; Transit Mixers and Trucks Hauling Concrete (over 6 yds.

to and including 10 yds.); Trucks, side, end, bottom and end dump (over 12 yds. to & including 20 yds.); Truck-Mounted Crane (with load bearing surface either mounted or pulled, up to 14 ton); Vacuum Truck (super sucker, guzzler, etc.)

GROUP 6: Flaherty Spreader Box Driver; Flowboys; Fork Lift (over 16,000 lbs.); Dumps (Semi-end); Mechanic (Field); Semi-end Dumps; Transfer Truck & Trailer; Transit Mixers & Trucks Hauling Concrete (over 10 yds. to & including 20 yds.); Trucks, side, end, bottom and articulated end dump (over 20 yds. to & including 40 yds.); Truck and Pup; Tournarocker, DW's & similar with 2 or more 4 wheel-power tractor with trailer, gallonage or yardage scale, whichever is greater Water Tank Truck (8,001-14,000 gallons)

GROUP 7: Oil Distributor Driver; Stringer Truck (cable operated trailer); Transit Mixers & Trucks Hauling Concrete (over 20 yds.); Truck, side, end, bottom end dump (over 40 yds. to & including 100 yds.); Truck Mounted Crane (with load bearing surface either mounted or pulled (16 through 25 tons);

GROUP 8: Prime Movers and Stinger Truck; Trucks, side, end, bottom and articulated end dump (over 100 yds.); Helicopter Pilot Hauling Employees or Materials

Footnote A - Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in additon to the classification working in as follows:

LEVEL C-D: - \$.50 PER HOUR (This is the lowest level of protection. This level may use an air purifying respirator or additional protective clothing.

LEVEL A-B: - \$1.00 PER HOUR (Uses supplied air is conjunction with a chemical spash suit or fully encapsulated suit with a self-contained breathing apparatus.

NOTE: Trucks Pulling Equipment Railers: shall receive \$.15/hour over applicable truck rate

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment

data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor

200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.
END OF GENERAL DECISION

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GENERAL DECISION WA030002 06/13/2003 WA2

Date: June 13, 2003

General Decision Number WA030002

Superseded General Decision No. WA020002

State: Washington

Construction Type:
BUILDING

County(ies):

CHELAN	KITSAP	PIERCE
CLALLAM	KITTITAS	SNOHOMISH
GRAYS HARBOR	LEWIS	THURSTON
JEFFERSON	MASON	
KING	PACIFIC	

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	06/13/2003

COUNTY(ies):

CHELAN	KITSAP	PIERCE
CLALLAM	KITTITAS	SNOHOMISH
GRAYS HARBOR	LEWIS	THURSTON
JEFFERSON	MASON	
KING	PACIFIC	

ASBE0007A 06/01/2002

	Rates	Fringes
ASBESTOS WORKERS/INSULATORS: (Includes application of all insulating materials, protective coverings, coating and finishes to all types of mechanical systems)	31.07	6.86

BOIL0242B 10/01/2002

	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
BOILERMAKERS	27.22	13.30

BOIL0502B 10/01/2002

	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC, PIERCE, SNOHOMISH AND THURSTON COUNTIES		

BOILERMAKERS	27.22	13.55

BRWA0001A 08/01/2002		
	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (northern part), PIERCE, SNOHOMISH AND THURSTON COUNTIES		
BRICKLAYERS	29.02	7.85

BRWA0001F 06/01/2002		
	Rates	Fringes
PACIFIC COUNTY (SOUTHERN PART)		
BRICKLAYERS	26.62	10.10
MARBLE MASONS	27.62	10.10

BRWA0001G 05/01/2002		
	Rates	Fringes
PACIFIC (SOUTHERN PORTION) COUNTY		
TILE SETTER AND TERRAZZO WORKERS	23.90	8.23
TILE AND TERRAZZO FINISHERS	17.99	6.27

BRWA0001H 08/01/2002		
	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (NORTHERN HALF), PIERCE, THURSTON AND SNOHOMISH COUNTIES		
TILE AND TERRAZZO WORKERS	26.44	7.79
TILE AND TERRAZZO FINISHERS	20.72	7.34

BRWA0003A 06/01/2002		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
BRICKLAYERS	23.16	8.81

BRWA0003E 07/01/2002		
	Rates	Fringes
CLELAN AND KITTITAS		
TILE AND TERRAZZO FINISHERS	14.70	5.83

BRWA0003F 07/01/2002		
	Rates	Fringes
CLELAN AND KITTITAS		
TERRAZZO WORKERS & TILE LAYER	18.50	5.83

CARP0770E 06/01/2002

WESTERN WASHINGTON: CLALLAM, GRAYS HARBOR, JEFFERSON, KING,
KITSAP, LEWIS, MASON, PACIFIC (NORTH), PIERCE, SNOHOMISH AND
THURSTON COUNTIES

	Rates	Fringes
CARPENTERS AND DRYWALL APPLICATORS	27.95	8.05
CARPENTERS ON CREOSOTE MATERIAL	28.05	8.05
INSULATION APPLICATORS	25.50	8.05
SAWFILERS, STATIONARY POWER SAW OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLER, FLOOR SANDER OPERATORS OF OTHER STATIONARY WOOD WORKING TOOLS	28.08	8.05
MILLWRIGHT AND MACHINE ERECTORS	28.95	8.05
ACOUSTICAL WORKERS	28.11	8.05
PILEDRIIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CRESOTE TREATED MATERIAL, ALL PILING	28.15	8.05
PILDRIVER, BRIDGE DOCK & WHARF CARPENTERS	27.95	8.05
DIVERS	68.97	8.05
DIVERS TENDER	30.68	8.05

(HOURLY ZONE PAY:WESTERN WASHINGTON AND CENTRAL WASHINGTON
CARPENTERS ONLY)

Hourly Zone Pay shall be paid on jobs located outside
of the free zone computed from the city center of the
following listed cities:

Seattle	Olympia	Bellingham
Auburn	Bremerton	Anacortes
Renton	Shelton	Yakima
Aberdeen-Hoquiam	Tacoma	Wenatchee
Ellensburg	Everett	Port Angeles
Centralia	Mount Vernon	Sunnyside
Chelan	Pt. Townsend	

Zone Pay	
0 -25 radius miles	Free
25-35 radius miles	\$1.00/hour
35-45 radius miles	\$1.15/hour
45-55 radius miles	\$1.35/hour
Over 55 radius miles	\$1.55/hour

(HOURLY ZONE PAY:WESTERN AND CENTRAL WASHINGTON-MILLWRIGHTS AND
PILEDRIIVERS ONLY)

Hour Zone Pay shall be computed from Seattle Union
Hall, Tacoma City center, and Everett City center

Zone Pay

0 -25	radius miles	Free
25-45	radius miles	\$.70/hour
Over 45	radius miles	\$1.50/hour

Millwrights and Piledrivers who reside in Aberdeen, Bellingham, Port Angeles, Mount Vernon, Olympia, Wenatchee, or Yakima Local Union jurisdiction areas, working on jobs in their respective area, shall have their Zone Pay measured from their respective city center

CENTRAL WASHINGTON: CHELAN AND KITTITAS COUNTIES

CARPENTERS AND DRYWALL APPLICATORS	20.72	7.82
CARPENTERS ON CREOSOTED MATERIALS	20.82	7.82
INSULATION APPLICATORS	20.72	7.82
SAWFILER, STATIONARY POWER SAW OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLERS, FLOOR SANDER OPERATOR AND OPERATORS OF OTHER STATIONARY WOOD WORKING TOOLS	20.85	7.82
MILLWRIGHTS AND MACHINE ERECTORS	28.95	7.82
ACCOUSTICAL WORKERS	20.98	7.82
PILDRIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING, OR CREOSOTE TREATED MATERIAL, ALL PILING	28.15	7.82
PILEDRIIVER, BRIDGE DOCK & WHARF CARPENTERS	27.95	7.82
DIVERS	68.97	8.05
DIVERS TENDER	30.68	8.05

CARP9003A 06/01/2002

	Rates	Fringes
PACIFIC COUNTY (South of a straight line made by extending the north boundary line of Wahkiakum County west to Willapa Bay to the Pacific Ocean, and thence north through the natural waterway to the Pacific Ocean (this will include the entire peninsula west of Willapa Bay))		

SEE ZONE DESCRIPTION FOR CITIES BASE POINTS

ZONE 1:

CARPENTERS	27.37	8.80
DRYWALL, ACOUSTICAL & LATHERS	27.37	8.80
FLOOR LAYERS & FLOOR FINISHERS (the laying of all hardwood floors nailed and mastic set, parquet and wood-type tiles, and block floors, the sanding and finishing of floors, the preparation of old and new floors when the materials mentioned above are to be installed; INSULATORS		

(fiberglass and similar irritating material)	27.52	8.80
MILLWRIGHTS	27.87	8.80
PILEDRIVERS	27.87	8.80
DIVERS	65.05	8.80
DIVERS TENDERS	29.91	8.80

Zone Differential (Add to Zone 1 rates):

Zone 2 -	\$0.85
Zone 3 -	1.25
Zone 4 -	1.70
Zone 5 -	2.00
Zone 6 -	3.00

BASEPOINTS: GOLDENDALE, LONGVIEW, AND VANCOUVER

ZONE 1: Projects located within 30 miles of the respective city hall of the above mentioned cities

ZONE 2: Projects located more than 30 miles and less than 40 miles of the respective city of the above mentioned cities

ZONE 3: Projects located more than 40 miles and less than 50 miles of the respective city of the above mentioned cities

ZONE 4: Projects located more than 50 miles and less than 60 miles of the respective city of the above mentioned cities.

ZONE 5: Projects located more than 60 miles and less than 70 miles of the respective city of the above mentioned cities

ZONE 6: Projects located more than 70 miles of the respected city of the above mentioned cities

ELEC0046B 12/30/2002

	Rates	Fringes
CALLAM, JEFFERSON, KING AND KITSAP COUNTIES		
ELECTRICIANS	34.25	3%+9.55
CABLE SPLICERS	37.68	3%+9.55

ELEC0046C 03/03/2003

	Rates	Fringes
CALLAM, JEFFERSON, KING, KITSAP COUNTIES		
SOUND AND COMMUNICATION TECHNICIAN	21.39	4.63

SCOPE OF WORK

Includes the installation, testing, service and maintenance, of the following systems which utilize the transmission and/or transference of voice, sound vision and digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems,

microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms, fire alarms and life safety systems (hang, terminate devices and panels and to conduct functional and systems tests), and low voltage master clock systems.

WORK EXCLUDED

Raceway systems are not covered (excluding Ladder-Rack for the purpose of the above listed systems). Chases and/or nipples (not to exceed 10 feet) may be installed on open wiring systems.

Energy management systems.

SCADA (Supervisory Control and Data Acquisition) when not intrinsic to the above listed systems (in the scope).

	Rates	Fringes
ELEC0076A 07/01/2002		
GRAYS HARBOR, LEWIS, MASON, PACIFIC, PIERCE, THURSTON COUNTIES		
ELECTRICIANS	29.78	3%+11.01
CABLE SPLICERS	32.76	3%+11.01

	Rates	Fringes
ELEC0076D 06/01/2001		
GRAYS HARBOR, LEWIS, MASON, PACIFIC, PIERCE AND THURSTON COUNTIES		
SOUND AND COMMUNICATIONS		
TECHNICIAN	18.77	5.97

SCOPE OF WORK

Includes the installation, testing, service and maintenance, of the following systems which utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms and low voltage master clock systems.

A. Communication systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems

SCADA (Supervisory control/data acquisition

PCM (Pulse code modulation)

Inventory control systems

Digital data systems

Broadband & baseband and carriers

Point of sale systems

VSAT data systems

Data communication systems

RF and remote control systems

Fiber optic data systems

B. Sound and Voice Transmission/Transference Systems

Background-Foreground Music
Intercom and Telephone Interconnect Systems
Sound and Musical Entertainment Systems
Nurse Call Systems
Radio Page Systems
School Intercom and Sound Systems
Burglar Alarm Systems
Low-Voltage Master Clock Systems
Multi-Media/Multiplex Systems
Telephone Systems
RF Systems and Antennas and Wave Guide

C. *Fire Alarm Systems-installation, wire pulling and testing.

D. Television and Video Systems

Television Monitoring and Surveillance Systems
Video Security Systems
Video Entertainment Systems
Video Educational Systems

Microwave Transmission Systems
CATV and CCTV

E. Security Systems

Perimeter Security Systems
Vibration Sensor Systems
Sonar/Infrared Monitoring Equipment
Access Control Systems
Card Access Systems

*Fire Alarm Systems

1. Fire Alarms-In Raceways
 - a. Wire and cable pulling, in raceways, performed at the current electrician wage rate and fringe benefits.
 - b. Installation and termination of devices, panels, startup, testing and programming performed by the technician.
2. Fire Alarms-Open Wire Systems
 - a. Open wire systems installed by the technician.

ELEC0112B 06/01/2002		
	Rates	Fringes
KITTITAS COUNTY		
ELECTRICIANS	28.75	3%+9.63
CABLE SPLICERS	30.19	3%+9.63

ELEC0112G 06/01/2002		
	Rates	Fringes
KITTTITAS COUNTY		

COMMUNICATION & SOUND
TECHNICIANS

19.97

5.93

SCOPE OF WORK

The work covered shall include the installation, testing, service and maintenance, of the following systems that utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for TV monitoring and surveillance, background foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms and low voltage master clock systems.

A. Communication systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems

SCADA (Supervisory control/data acquisition

PCM (Pulse code modulation)

Inventory control systems

Digital data systems

Broadband & baseband and carriers

Point of sale systems

VSAT data systems

Data communication systems

RF and remote control systems

Fiber optic data systems

B. Sound and Voice Transmission/Transference Systems

Background-Foreground Music

Intercom and Telephone Interconnect Systems

Sound and Musical Entertainment Systems

Nurse Call Systems

Radio Page Systems

School Intercom and Sound Systems

Burglar Alarm Systems

Low-Voltage Master Clock Systems

Multi-Media/Multiplex Systems

Telephone Systems

RF Systems and Antennas and Wave Guide

C. *Fire Alarm Systems-installation, wire pulling and testing.

D. Television and Video Systems

Television Monitoring and Surveillance Systems

Video Security Systems

Video Entertainment Systems

Video Educational Systems

Microwave Transmission Systems

CATV and CCTV

E. Security Systems

Perimeter Security Systems

Vibration Sensor Systems
 Sonar/Infrared Monitoring Equipment
 Access Control Systems
 Card Access Systems

*Fire Alarm Systems

1. Fire Alarms-In Raceways
 - a. Wire and cable pulling, in raceways, performed at the current electrician wage rate and fringe benefits.
 - b. Installation and termination of devices, panels, startup, testing and programing performed by the technician.
2. Fire Alarms-Open Wire Systems
 - a. Open wire systems installed by the technician.

ELEC0191A 12/01/2002		
	Rates	Fringes
CHELAN COUNTY		
ELECTRICIANS	26.66	3%+9.28
CABLE SPLICERS	29.33	3%+9.28

ELEC0191E 06/01/2002		
	Rates	Fringes
CHELAN AND SNOHOMISH COUNTIES		
SOUND AND COMMUNICATIONS		
TECHNICIANS	21.50	4.84

SCOPE OF WORK

The work covered shall include the installation, testing, service and maintenance, of the following systems that utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for TV monitoring and surveillance, background foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms and low voltage master clock systems.

A. Communication systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems

SCADA (Supervisory control/data acquisition)
 PCM (Pulse code modulation)
 Inventory control systems
 Digital data systems
 Broadband & baseband and carriers
 Point of sale systems
 VSAT data systems
 Data communication systems
 RF and remote control systems
 Fiber optic data systems

B. Sound and Voice Transmission/Transference Systems

Background-Foreground Music
Intercom and Telephone Interconnect Systems
Sound and Musical Entertainment Systems
Nurse Call Systems
Radio Page Systems
School Intercom and Sound Systems
Burglar Alarm Systems
Low-Voltage Master Clock Systems
Multi-Media/Multiplex Systems
Telephone Systems
RF Systems and Antennas and Wave Guide

C. *Fire Alarm Systems-installation, wire pulling and testing.

D. Television and Video Systems

Television Monitoring and Surveillance Systems
Video Security Systems
Video Entertainment Systems
Video Educational Systems
Microwave Transmission Systems

CATV and CCTV

E. Security Systems

Perimeter Security Systems
Vibration Sensor Systems
Sonar/Infrared Monitoring Equipment
Access Control Systems
Card Access Systems

*Fire Alarm Systems

1. Fire Alarms-In Raceways

- a. Wire and cable pulling, in raceways, performed at the current electrician wage rate and fringe benefits.
- b. Installation and termination of devices, panels, startup, testing and programming performed by the technician.

2. Fire Alarms-Open Wire Systems

- a. Open wire systems installed by the technician.

ELEC0191L 08/31/2002

	Rates	Fringes
SNOHOMISH COUNTY		
ELECTRICIANS	30.66	3%+9.33
CABLE SPLICERS	33.72	3%+9.33

ELEV0019B 01/01/2003

	Rates	Fringes
CHELAN, CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, KITITITAS, LEWIS, MASON, PIERCE, SNOHOMISH AND THURSTON COUNTIES		

ELEVATOR MECHANICS 33.745 9.355+a

FOOTNOTE a: Vacation Pay: 8% with 5 or more years of service, 6% for 6 months to 5 years service. Paid Holidays: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Friday after, and Christmas Day.

ELEV0023B 01/01/2003
Rates Fringes
PACIFIC COUNTY
ELEVATOR MECHANIC 33.915 9.355+a

FOOTNOTE a: Vacation Pay: 8% with 5 or more years of service, 6% for 6 months to 5 years service. Paid Holidays: Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Friday after, and Christmas Day, and New Years Day.

ENGI0302B 06/01/2002
Rates Fringes
CHELAN (WEST OF THE 120TH MERIDIAN), CLALLAM, GRAYS HARBOR,
JEFFERSON, KING, KITSAP, KITTITAS, MASON AND SNOHOMISH COUNTIES

ON PROJECTS DESCRIBED IN FOOTNOTE A BELOW, THE RATE FOR EACH GROUP SHALL BE 95% OF THE BASE RATE PLUS FULL FRINGE BENEFITS. ON ALL OTHER WORK, THE FOLLOWING RATES APPLY.

POWER EQUIPMENT OPERATORS:
Zone 1 (0-25 radius miles):
GROUP 1AAA 31.14 8.40
GROUP 1AA 30.64 8.40
GROUP 1A 30.14 8.40
GROUP 1 29.64 8.40
GROUP 2 29.20 8.40
GROUP 3 28.84 8.40
GROUP 4 26.74 8.40

Zone Differential (Add to Zone 1 rates):
Zone 2 (26-45 radius miles) - \$.70
Zone 3 (Over 45 radius miles) - \$1.00

BASEPOINTS: Aberdeen, Bellingham, Bremerton, Everett, Kent, Mount Vernon, Port Angeles, Port Townsend, Seattle, Shelton, Wenatchee, Yakima

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1AAA - Cranes-over 300 tons, or 300 ft of boom (including jib with attachments)

GROUP 1AA - Cranes 200 to 300 tons, or 250 ft of boom (including jib with attachments); Tower crane over 175 ft in height, base to boom

GROUP 1A - Cranes, 100 tons thru 199 tons, or 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Tower crane up to 175 ft in height base to boom; Loaders-overhead, 8 yards and over; Shovels, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes 45 tons thru 99 tons, under 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Derricks on building work; Excavator, shovel, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader-overhead 6 yards to, but not including 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9, HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self propelled 45 yards and over; Slipform pavers; Transporters, all truck or track type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-Concrete; Bump Cutter; Cranes, 20 tons thru 44 tons with attachments; Crane-overhead, bridge type-20 tons through 44 tons; Chipper; Concrete Pump-truck mount with boom attachment; Crusher; Deck Engineer/Deck Winches (power); Drilling machine; Excavator,

shovel, backhoe-3 yards and under; Finishing Machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Horizontal/directional drill operator; Loaders-overhead under 6 yards; Loaders-plant feed; Locomotives-all; Mechanics-all; Mixers-asphalt plant; Motor patrol graders-finishing; Piledriver (other than crane mount); Roto-mill, roto-grinder; Screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self propelled, hard tail end dump, articulating off-road equipment-under 45 yards; Subgrade trimmer; Tractors, backhoes-over 75 hp; Transfer material service machine-shuttle buggy, blaw knox-roadtec; Truck crane oiler/driver-100 tons and over; Truck Mount portable conveyor; Yo Yo Pay dozer

GROUP 3 - Conveyors; Cranes-thru 19 tons with attachments; A-frame crane over 10 tons; Drill oilers-auger type, truck or crane mount; Dozers-D-9 and under; Forklift-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/boom trucks over 10 tons; Loader-elevating type, belt; Motor patrol grader-nonfinishing; Plant oiler-asphalt, crusher; Pumps-concrete; Roller, plant mix or multi-lift materials; Saws-concrete; Scrapers-concrete and carry-all; Service engineer-equipment; Trenching machines; Truck Crane Oiler/Driver under 100 tons; Tractors, backhoe 75 hp and under

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete finish machine-laser screed; Cranes-A frame-10 tons and under; Elevator and Manlift-permanent or shaft type; Gradechecker, Stakehop; Forklifts under 3000 lbs. with attachments; Hydralifts/boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole digger, mechanical; Power plant; Pumps, water; Rigger and Bellman; Roller-other than plant mix;

Wheel Tractors, farmall type; Shotcrete/gunite equipment operator

FOOTNOTE A- Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and bridges whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not

outfitted with protective clothing

H-2 Class "C" Suit - Base wage rate plus \$.25 per hour.

H-3 Class "B" Suit - Base wage rate plus \$.50 per hour.

H-4 Class "A" Suit - Base wage rate plus \$.75 per hour.

ENGI0370I 06/01/2002

	Rates	Fringes
CHELAN (EAST OF THE 120TH MERIDIAN) COUNTY		

ZONE 1:

POWER EQUIPMENT OPERATORS:

GROUP 1A	20.44	6.52
GROUP 1	20.99	6.52
GROUP 2	21.31	6.52
GROUP 3	21.92	6.52
GROUP 4	22.08	6.52
GROUP 5	22.24	6.52
GROUP 6	22.52	6.52
GROUP 7	22.79	6.52
GROUP 8	23.89	6.52

ZONE DIFFERENTIAL (Add to Zone 1
rate): Zone 2 - \$2.00

Zone 1: Within 45 mile radius of Spokane, Moses Lake, Pasco,
Washington; Lewiston, Idaho

Zone 2: Outside 45 mile radius of Spokane, Moses Lake, Pasco,
Washington; Lewiston, Idaho

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1A: Boat Operator; Crush Feeder; Oiler; Steam Cleaner

GROUP 1: Bit Grinders; Bolt Threading Machine; Compressors

(under 2000 CFM, gas, diesel, or electric power); Deck Hand; Drillers Helper (assist driller in making drill rod connections, service drill engine and air compressor, repair drill rig and drill tools; drive drill support truck to and on the job site, remove drill cuttings from around bore hole and inspect drill rig while in operation); Fireman & Heat Tender; Grade Checker; Hydro-seeder, Mulcher, Nozzleman; Oiler Driver, & Cable Tender, Mucking Machine; Pumpman; Rollers, all types on subgrade, including seal and chip coatings (farm type, Case, John Deere & similar, or Compacting Vibrator), except when pulled by Dozer with operable blade; Welding Machine

GROUP 2: A-frame Truck (single drum); Assistant Refrigeration Plant (under 1000 ton); Assistant Plant Operator, Fireman or Pugmixer (asphalt); Bagley or Stationary Scraper; Belt Finishing Machine; Blower Operator (cement); Cement Hog; Compressor (2000 CFM or over, 2 or more, gas diesel or electric power); Concrete Saw (multiple cut); Distributor Leverman; Ditch Witch or similar; Elevator Hoisting Materials; Dope Pots (power agitated); Fork Lift or Lumber Stacker, hydra-lift & similar; Gin Trucks

(pipeline); Hoist, single drum; Loaders (bucket elevators and conveyors); Longitudinal Float; Mixer (portable-concrete); Pavement Breaker, Hydra-Hammer & similar; Power Broom; Railroad Ballast Regulation Operator (self-propelled); Railroad Power Tamper Operator (self-propelled); Railroad Tamper Jack Operator (self-propelled); Spray Curing Machine (concrete); Spreader Box (self-propelled); Straddle Buggy (Ross & similar on construction job only); Tractor (Farm type R/T with attachment, except Backhoe); Tugger Operator

GROUP 3: A-frame Truck (2 or more drums); Assistant Refrigeration Plant & Chiller Operator (over 1000 ton); Backfillers (Cleveland & similar); Batch Plant & Wet Mix Operator, single unit (concrete); Belt-Crete Conveyors with power pack or similar; Belt Loader (Kocal or similar); Bending Machine; Bob Cat; Boring Machine (earth); Boring Machine (rock under 8" bit) (Quarry Master, Joy or similar); Bump Cutter (Wayne, Saginaw or similar); Canal Lining Machine (concrete); Chipper (without crane); Cleaning & Doping Machine (pipeline); Deck Engineer; Elevating Belt-type Loader (Euclid, Barber Green & similar); Elevating Grader-type Loader (Dumora, Adams or similar); Generator Plant Engineers (diesel or electric); Gunnite Combination Mixer & Compressor; Locomotive Engineer; Mixermobile; Mucking Machine; Posthole Auger or Punch; Pump (grout or jet); Soil Stabilizer (P & H or similar); Spreader Machine; Tractor (to D-6 or equivalent) and Traxcavator; Traverse Finish Machine; Turnhead Operator

GROUP 4: Concrete Pumps (squeeze-crete, flow-crete, pump-crete, Whitman & similar); Curb Extruder (asphalt or concrete); Drills (churn, core, calyx or diamond) (Operate drilling machine, drive or transport drill rig to and on job site and weld well casing); Equipment Serviceman, Greaser & Oiler; Hoist (2 or more drums or Tower Hoist); Loaders (overhead & front-end, under 4 yds. R/T); Refrigeration Plant Engineer (under 1000 ton); Rubber-tired Skidders (R/T with or without attachments); Surface Heater & Planer Machine; Trenching Machines (under 7 ft. depth capacity);

Turnhead (with re-screening); Vacuum Drill (reverse circulation drill under 8" bit)

GROUP 5: Backhoe (under 45,000 gw); Backhoe and Hoe Ram (under 3/4 yd.); Carrydeck & boom truck (under 25 tons); Cranes (25 tons & under), all attachments including clamshell, dragline); Derricks & Stifflegs (under 65 tons); Drilling Equipment (8" bit & over) (Robbins, reverse circulation & similar)(operates drill machine, drive or transport drill rig to and on job site and weld well casing); Hoe Ram; Piledriving Engineers; Paving (dual drum); Railroad Track Liner Operator(self-propelled); Refrigeration Plant Engineer (1000 tons & over); Signaller (Whirleys, Highline Hammerheads or similar)

GROUP 6: Asphalt Plant Operator; Automatic Subgrader (Ditches & Trimmers) (Autograde, ABC, R.A. Hansen & similar on grade wire); Backhoe (45,000 gw and over to 110,000 gw); Backhoes & Hoe Ram (3/4 yd. to 3 yd.); Batch Plant (over 4 units); Batch & Wet Mix Operator (multiple units, 2 & incl. 4); Blade Operator (Motor Patrol & Attachments, Athey & Huber); Boom Cats (side); Cableway

Controller (dispatcher); Clamshell Operator (under 3 yds.); Compactor (self-propelled with blade); Concrete Pump Boom Truck; Concrete Slip Form Paver; Cranes (over 25 tons including 45 tons), all attachments including clamshell, dragline; Crusher, Grizzle & Screening Plant Operator; Dozer, 834 R/T & similar; Draglines (under 3 yds.); Drill Doctor; H.D.Mechanic; H.D. Welder; Loader Operator (front-end & overhead, 4 yds. incl. 8 yds.); Multiple Dozer Units with single blade; Paving Machine (asphalt and concrete); Quad-Track or similar equipment; Roller (finishing asphalt pavement); Roto Mill (pavement grinder); Scrapers, all rubber-tired; Screed Operator; Shovel (under 3 yds.); Tractors (D-6 & equivalent & over); Trenching Machines (7 ft. depth & over); Tug Boat Operator; Vector Guzzler, super sucker

GROUP 7: Backhoe (over 110,000 gw); Backhoes & Hoe Ram (3 yds. & over); Blade (finish & bluetop), Automatic, CMI, ABC, Finish Athey & Huber & similar when used as automatic; Cableway Operators; Clamshell Operator (3 yds. & over); Cranes (over 45 tons to but not including 85 tons), all attachments including clamshell and dragline; Derricks & Stifflegs (65 tons & over); Draglines (3 yds. & over); Elevating Belt (Holland type); Heavy Equipment Robotics Operator; Loader (360 degrees revolving Koehring Scooper or similar); Loaders (overhead & front-end, over 8 yds. to 10 yds.); Rubber-tired Scrapers (multiple engine with three or more scrapers); Shovels (3 yds. & over); Ultra High Pressure Waterjet Cutting Tool System Operator (30,000 psi); Vacuum Blasting Machine Operator; Whirleys & Hammerheads, ALL

GROUP 8: Cranes (85 tons and over, and all climbing, overhead, rail and tower); Loaders (overhead and front-end, 10 yards and over); Helicopter Pilot

BOOM PAY: (All Cranes, Including Tower)
180' to 250' \$.30 over scale

Over 250' \$.60 over scale

NOTE: In computing the length of the boom on Tower Cranes, they shall be measured from the base of the tower to the point of the boom.

HAZMAT: Anyone working on HAZMAT jobs, working with supplied air shall receive \$1.00 an hour above classification.

ENGI0612B 06/01/2002

LEWIS, PIERCE, PACIFIC (portion lying north of a parallel line extending west from the northern boundary of Wahkaikum County to the sea) AND THURSTON COUNTIES

ON PROJECTS DESCRIBED IN FOOTNOTE A BELOW, THE RATE FOR EACH GROUP SHALL BE 90% OF THE BASE RATE PLUS FULL FRINGE BENEFITS. ON ALL OTHER WORK, THE FOLLOWING RATES APPLY.

POWER EQUIPMENT OPERATORS:

Zone 1 (0-25 radius miles):

GROUP 1AAA	31.14	8.40
GROUP 1AA	30.64	8.40
GROUP 1A	30.14	8.40
GROUP 1	29.64	8.40
GROUP 2	29.20	8.40
GROUP 3	28.84	8.40
GROUP 4	26.74	8.40

Zone Differential (Add to Zone 1 rates):

Zone 2 (26-45 radius miles) = \$.70

Zone 3 (Over 45 radius miles) - \$1.00

BASEPOINTS: CENTRALIA, OLYMPIA, TACOMA

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1 AAA - Cranes-over 300 tons or 300 ft of boom (including jib with attachments)

GROUP 1AA - Cranes- 200 tons to 300 tons, or 250 ft of boom (including jib with attachments; Tower crane over 175 ft in height, base to boom)

GROUP 1A - Cranes, 100 tons thru 199 tons, or 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Tower crane up to 175 ft in height base to boom; Loaders-overhead, 8 yards and over; Shovels, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes 45 tons thru 99 tons under 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Derricks on building work; Excavator, shovel, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader-overhead, 6 yards to, but not including, 8 yards; Mucking

machine, mole, tunnel, drill and/or shield; Quad 9 HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self-propelled 45 yards and over; Slipform pavers; Transporters, all track or truck type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-concrete; Bump Cutter; Cranes, 20 tons thru 44 tons with attachments; Crane-Overhead, bridge type, 20 tons through 44 tons; Chipper; Concrete pump-truck mount with boom attachment; Crusher; Deck engineer/deck winches (power); Drilling machine; Excavator, shovel, backhoe-3 yards and under; Finishing machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Loaders, overhead under 6 yards; Loaders-plant feed; Locomotives-all; Mechanics- all; Mixers, asphalt plant; Motor patrol graders, finishing; Piledriver (other than crane mount); Roto-mill, roto-grinder; Screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self-propelled, hard tail end dump, articulating off-road equipment-under 45 yards; Subgrader trimmer; Tractors, backhoe over 75

hp; Transfer material service machine-shuttle buggy, Blaw Knox-Roadtec; Truck Crane oiler/driver-100 tons and over; Truck Mount Portable Conveyor; Yo Yo pay

GROUP 3 - Conveyors; Cranes through 19 tons with attachments; Crane-A-frame over 10 tons; Drill oilers-auger type, truck or crane mount; Dozer-D-9 and under; Forklift-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside Hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/boom trucks over 10 tons; Loaders-elevating type, belt; Motor patrol grader-nonfinishing; Plant oiler-asphalt, crusher; Pump-Concrete; Roller, plant mix or multi-lfit materials; Saws-concrete; Scrapers, concrete and carry all; Service engineers-equipment; Trenching machines; Truck crane oiler/driver under 100 tons; Tractors, backhoe under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Cranes A-frame 10 tons and under; Elevator and manlift (permanent and shaft type); Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts/boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole digger-mechanical; Power plant; Pumps-water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shotcrete/gunite equipment operator

FOOTNOTE A- Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and bridges whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not outfitted with protective clothing

H-2 Class "C" Suit - Base wage rate plus \$.25 per hour.

H-3 Class "B" Suit - Base wage rate plus \$.50 per hour.

H-4 Class "A" Suit - Base wage rate plus \$.75 per hour.

ENGI0701H 01/01/2003

PACIFIC (remaining portion) COUNTY

	Rates	Fringes
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POWER EQUIPMENT OPERATORS (See Footnote A)

ZONE 1:

GROUP 1	29.30	8.95
GROUP 1A	30.77	8.95
GROUP 1B	32.23	8.95
GROUP 2	28.07	8.95
GROUP 3	27.31	8.95
GROUP 4	26.79	8.95
GROUP 5	26.19	8.95
GROUP 6	23.84	8.95

Zone Differential (add to Zone 1 rates):

Zone 2 - \$1.50

Zone 3 - 3.00

For the following metropolitan counties: MULTNOMAH; CLACKAMAS; MARION; WASHINGTON; YAMHILL; AND COLUMBIA; CLARK; AND COWLITZ COUNTY, WASHINGTON WITH MODIFICATIONS AS INDICATED:

All jobs or projects located in Multnomah, Clackamas and Marion Counties, West of the western boundary of Mt. Hood National Forest and West of Mile Post 30 on Interstate 84 and West of Mile Post 30 on State Highway 26 and West of Mile Post 30 on Highway 22 and all jobs or projects located in Yamhill County, Washington County and Columbia County and all jobs or projects located in Clark & Cowlitz County, Washington except that portion of Cowlitz County in the Mt. St. Helens "Blast Zone" shall receive Zone I pay for all classifications.

All jobs or projects located in the area outside the identified boundary above, but less than 50 miles from the Portland City Hall shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the Portland City Hall, but outside the identified border above, shall receive Zone III pay for all classifications.

For the following cities: ALBANY; BEND; COOS BAY; EUGENE; GRANTS PASS; KLAMATH FALLS; MEDFORD; ROSEBURG

All jobs or projects located within 30 miles of the respective city hall of the above mentioned cities shall receive Zone I pay for all classifications.

All jobs or projects located more than 30 miles and less than 50 miles from the respective city hall of the above mentioned cities shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the respective city hall of the above mentioned cities shall receive Zone III pay for all classifications.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: CONCRETE: Batch Plant and/or Wet Mix Operator, three units or more; CRANE: Helicopter Operator, when used in erecting work; Whirley Operator, 90 ton and over; LATTICE BOOM CRANE: Operator 200 tons through 299 tons, and/or over 200 feet boom; HYDRAULIC CRANE: Hydraulic Crane Operator 90 tons through 199 tons with luffing or tower attachments; FLOATING EQUIPMENT: Floating Crane, 150 ton but less than 250 ton

GROUP 1A: HYDRAULIC CRANE: Hydraulic Operator, 200 tons and over (with luffing or tower attachment); LATTICE BOOM CRANE: Operator, 200 tons through 299 tons, with over 200 feet boom; FLOATING EQUIPMENT: Floating Crane 250 ton and over

GROUP 1B: LATTICE BOOM CRANE: Operator, 300 tons through 399 tons with over 200 feet boom; Operator 400 tons and over; FLOATING EQUIPMENT: Floating Crane 350 ton and over

GROUP 2: ASPHALT: Asphalt Plant Operator (any type); Roto Mill, pavement profiler, operator, 6 foot lateral cut and over; BLADE: Auto Grader or "Trimmer" (Grade Checker required); Blade Operator, Robotic; BULLDOZERS: Bulldozer operator over 120,000 lbs and above; Bulldozer operator, twin engine; Bulldozer Operator, tandem, quadnine, D10, D11, and similar type; Bulldozere Robotic Equipment (any type; CONCRETE: Batch Plant and/or Wet Mix Operator, one and two drum; Automatic Concrete Slip Form Paver Operator; Concrete Canal Line Operator; Concrete Profiler, Diamond Head; CRANE: Cableway Operator, 25 tons and over; HYDRAULIC CRANE: Hydraulic crane operator 90 tons through 199 tons (with luffing or tower attachment); TOWER/WHIRLEY OPERATOR: Tower Crane Operator; Whirley Operator, under 90 tons; LATTICE BOOM CRANE: 90 through 199 tons and/or 150 to 200 feet boom; CRUSHER: Crusher Plant Operator; FLOATING EQUIPMENT: Floating Clamshell, etc.operator, 3 cu. yds. and over; Floating Crane (derrick barge) Operator, 30 tons but less than 150 tons; LOADERS: Loader operator, 120,000 lbs. and above; REMOTE CONTROL: Remote controlled earth-moving equipment; RUBBER-TIRED SCRAPERS: Rubber-tired scraper operator, with tandem scrapers, multi-engine; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER OPERATOR: Shovel, Dragline, Clamshell, operator 5 cu. yds and over; TRENCHING MACHINE: Wheel Excavator, under 750 cu. yds. per hour (Grade Oiler required); Canal Trimmer (Grade Oiler required); Wheel Excavator,

over 750 cu. yds. per hour; Band Wagon (in conjunction with wheel excavator); UNDERWATER EQUIPMENT: Underwater Equipment Operator, remote or otherwise; HYDRAULIC HOES-EXCAVATOR: Excavator over 130,000 lbs.

GROUP 3: BULLDOZERS: Bulldozer operator, over 70,000 lbs. up to and including 120,000 lbs.; HYDRAULIC CRANE: Hydraulic crane operator, 50 tons through 89 tons (with luffing or tower attachment); LATTICE BOOM CRANES: Lattice Boom Crane-50 through 89 tons (and less than 150 feet boom); FORKLIFT: Rock Hound Operator; HYDRAULIC HOES-EXCAVATOR: excavator over 80,000 lbs. through 130,000 lbs.; LOADERS: Loader operator 60,000 and less than 120,000; RUBBER-TIRED SCRAPERS: Scraper Operator, with tandem scrapers; Self-loading, paddle wheel, auger type, finish and/or 2 or more units; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER

OPERATOR: Shovel, Dragline, Clamshell operators 3 cu. yds. but less than 5 cu yds.

GROUP 4: ASPHALT: Screed Operator; Asphalt Paver operator (screeman required); BLADE: Blade operator; Blade operator, finish; Blade operator, externally controlled by electronic, mechanical hydraulic means; Blade operator, multi-engine; BULLDOZERS: Bulldozer Operator over 20,000 lbs and more than 100 horse up to 70,000 lbs; Drill Cat Operator; Side-boom Operator; Cable-Plow Operator (any type); CLEARING: Log Skidders; Chippers; Incinerator; Stump Splitter (loader mounted or similar type); Stump Grinder (loader mounted or similar type; Tub Grinder; Land Clearing Machine (Track mounted forestry mowing & grinding machine); Hydro Axe (loader mounted or similar type); COMPACTORS SELF-PROPELLED: Compactor Operator, with blade; Compactor Operator, multi-engine; Compactor Operator, robotic; CONCRETE: Mixer Mobile Operator; Screed Operator; Concrete Cooling Machine Operator; Concrete Paving Road Mixer; Concrete Breaker; Reinforced Tank Banding Machine (K-17 or similar types); Laser Screed; CRANE: Chicago boom and similar types; Lift Slab Machine Operator; Boom type lifting device, 5 ton capacity or less; Hoist Operator, two (2) drum; Hoist Operator, three (3) or more drums; Derrick Operator, under 100 ton; Hoist Operator, stiff leg, guy derrick or similar type, 50 ton and over; Cableway Operator up to twenty (25) ton; Bridge Crane Operator, Locomotive, Gantry, Overhead; Cherry Picker or similar type crane; Carry Deck Operator; Hydraulic Crane Operator, under 50 tons; LATTICE BOOM CRANE OPERATOR: Lattice Boom Crane Operator, under 50 tons; CRUSHER: Generator Operator; Diesel-Electric Engineer; Grizzly Operator; Drill Doctor; Boring Machine Operator; Driller-Percussion, Diamond, Core, Cable, Rotary and similar type; Cat Drill (John Henry); Directional Drill Operator over 20,000 lbs pullback; FLOATING EQUIPMENT: Diesel-electric Engineer; Jack Operator, elevating barges, Barge Operator, self-unloading; Piledriver Operator (not crane type) (Deckhand required); Floating Clamshell, etc. Operator, under 3 cu. yds. (Fireman or Diesel-Electric Engineer required); Floating Crane (derrick barge) Operator, less than 30 tons; GENERATORS: Generator Operator; Diesel-electric Engineer; GUARDRAIL EQUIPMENT: Guardrail Punch Operator (all types); Guardrail Auger Operator (all types); Combination Guardrail machines, i.e., punch

auger, etc.; HEATING PLANT: Surface Heater and Planer Operator; HYDRAULIC HOES EXCAVATOR: Robotic Hydraulic backhoe operator, track and wheel type up to and including 20,000 lbs. with any or all attachments; Excavator Operator over 20,000 lbs through 80,000 lbs.; LOADERS: Belt Loaders, Kolman and Ko Cal types; Loaders Operator, front end and overhead, 25,000 lbs and less than 60,000 lbs; Elevating Grader Operator by Tractor operator, Sierra, Euclid or similar types; PILEDRIVERS: Hammer Operator; Piledriver Operator (not crane type); PIPELINE, SEWER WATER: Pipe Cleaning Machine Operator; Pipe Doping Machine Operator; Pipe Bending Machine Operator; Pipe Wrapping Machine Operator; Boring Machine Operator; Back Filling Machine Operator; REMOTE CONTROL: Concrete Cleaning Decontamination Machine Operator; Ultra High Pressure Water Jet Cutting Tool System Operator/Mechanic; Vacuum Blasting Machine Operator/mechanic; REPAIRMEN, HEAVY DUTY: Diesel

Electric Engineer (Plant or Floating; Bolt Threading Machine operator; Drill Doctor (Bit Grinder); H.D. Mechanic; Machine Tool Operator; RUBBER-TIRED SCRAPERS: Rubber-tired Scraper Operator, single engine, single scraper; Self-loading, paddle wheel, auger type under 15 cu. yds.; Rubber-tired Scraper Operator, twin engine; Rubber-tired Scraper Operator, with push-ull attachments; Self Loading, paddle wheel, auger type 15 cu. yds. and over, single engine; Water pulls, water wagons; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER OPERATOR: Diesel Electric Engineer; Stationary Drag Scraper Operator; Shovel, Dragline, Clamshell, Operator under 3 cy yds.; Grade-all Operator; SURFACE (BASE) MATERIAL: Blade mounted spreaders, Ulrich and similar types; TRACTOR-RUBBERED TIRED: Tractor operator, rubber-tired, over 50 hp flywheel; Tractor operator, with boom attachment; Rubber-tired dozers and pushers (Michigan, Cat, Hough type); Skip Loader, Drag Box; TRENCHING MACHINE: Trenching Machine operator, digging capacity over 3 ft depth; Back filling machine operator; TUNNEL: Mucking machine operator

GROUP 5: ASPHALT: Extrusion Machine Operator; Roller Operator (any asphalt mix); Asphalt Burner and Reconditioner Operator (any type); Roto-Mill, pavement profiler, ground man; BULLDOZERS: Bulldozer operator, 20,000 lbs. or less or 100 horse or less; COMPRESSORS: Compressor Operator (any power), over 1,250 cu. ft. total capacity; COMPACTORS: Compactor Operator, including vibratory; Wagner Pactor Operator or similar type (without blade); CONCRETE: Combination mixer and Compressor Operator, gunite work; Concrete Batch Plant Quality Control Operator; Belcrete Operator; Pumpcrete Operator (any type); Pavement Grinder and/or Grooving Machine Operator (riding type); Cement Pump Operator, Fuller-Kenyon and similar; Concrete Pump Operator; Grouting Machine Operator; Concrete mixer operator, single drum, under (5) bag capacity; Cast in place pipe laying machine; maginnis Internal Full slab vibrator operator; Concrete finishing machine operator, Clary, Johnson, Bidwell, Burgess Bridge deck or similar type; Curb Machine Operator, mechanical Berm, Curb and/or Curb and Gutter; Concrete Joint Machine Operator; Concrete Planer Operator; Tower Mobile Operator; Power Jumbo Operator setting slip forms in tunnels; Slip Form Pumps, power driven hydraulic lifting device for concrete forms; Concrete Paving Machine Operator; Concrete Finishing Machine

Operator; Concrete Spreader Operator; CRANE: Helicopter Hoist Operator; Hoist Operator, single drum; Elevator Operator; A-frame Truck Operator, Double drum; Boom Truck Operator; HYDRAULIC CRANE OPERATOR: Hydraulic Boom Truck, Pittman; DRILLING: Churn Drill and Earth Boring Machine Operator; Vacuum Truck; Directional Drill Operator over 20,000 lbs pullback; FLOATING EQUIPMENT: Fireman; FORKLIFT: Fork Lift, over 10 ton and/or robotic; HYDRAULIC HOES EXCAVATORS: Hydraulic Backhoe Operator, wheel type (Ford, John Deere, Case type); Hydraulic Backhoe Operator track type up to and including 20,000 lbs.; LOADERS: Loaders, rubber-tired type, less than 25,000 lbs; Elevating Grader Operator, Tractor Towed requiring Operator or Grader; Elevating loader operator, Athey and similar types; OILERS: Service oiler (Greaser); PIPELINE-SEWER WATER: Hydra hammer or simialr types; Pavement Breaker Operator; PUMPS: Pump Operator, more than 5 (any

size); Pot Rammer Operator; RAILROAD EQUIPMENT: Locomotive Operator, under 40 tons; Ballast Regulator Operator; Ballast Tamper Multi-Purpose Operator; Track Liner Operator; Tie Spacer Operator; Shuttle Car Operator; Locomotive Operator, 40 tons and over; MATERIAL HAULRS: Cat wagon DJB's Volvo similar types; Conveyored material hauler; SURFACING (BASE) MATERIAL: Rock Spreaders, self-propelled; Pulva-mixer or similar types; Chiip Spreading machine operator; Lime spreading operator, construction job siter; SWEEPERS: Sweeper operator (Wayne type) self-propelled construction job site; TRACTOR-RUBBER TIRED: Tractor operator, rubber-tired, 50 hp flywheel and under; Trenching machine operator, maximum digging capacity 3 ft depth; TUNNEL: Dinkey

GROUP 6: ASPHALT: Plant Oiler; Plant Fireman; Pugmill Operator (any type); Truck mounted asphalt spreader, with screed; COMPRESSORS: Compressor Operator (any power), under 1,250 cu. ft. total capacity; CONCRETE: Plant Oiler, Assistant Conveyor Operator; Conveyor Operator; Mixer Box Operator (C.T.B., dry batch, etc.); Cement Hog Operator; Concrete Saw Operator; Concrete Curing Machine Operator (riding type); Wire Mat or Brooming Machine Operator; CRANE: Oiler; Fireman, all equipment; Truck Crane Oiler Driver; A-frame Truck Operator, single drum; Tugger or Coffin Type Hoist Operator; CRUSHER: Crusher Oiler; Crusher Feeder; CRUSHER: Crusher oiler; Crusher feeder; DRILLING: Drill Tender; Auger Oiler; FLOATING EQUIPMENT: Deckhand; Boatman; FORKLIFT: Self-propelled Scaffolding Operator, construction job site (exclduing working platform); Fork Lift or Lumber Stacker Operator, construction job site; Ross Carrier Operator, construction job site; Lull Hi-Lift Operator or Similar Type; GUARDRAIL EQUIPMENT: Oiler; Auger Oiler; Oiler, combination guardrail machines; Guardrail Punch Oiler; HEATING PLANT: Temporary Heating Plant Operator; LOADERS: Bobcat, skid steer (less than 1 cu yd.); Bucket Elevator Loader Operator, BarberGreene and similar types; OILERS: Oiler; Guardrail Punch Oiler; Truck Crane Oiler-Driver; Auger Oiler; Grade Oiler, required to check grade; Grade Checker; Rigger; PIPELINE-SEWER WATER: Tar Pot Fireman; Tar Pot Fireman (power agitated); PUMPS: Pump Operator (any power); Hydrostatic Pump Operator; RAILROAD EQUIPMENT: Brakeman; Oiler; Switchman; Motorman; Ballast Jack Tamper Operator; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER, ETC. OPERATOR: Oiler, Grade Oiler (required to check grade); Grade Checker; Fireman; SWEEPER: Broom operator,

self propelled, construction job site; SURFACING (BASE) MATERIAL:
 Roller Operator, grading of base rock (not asphalt); Tamping
 Machine operator, mechanical, self-propelled; Hydrographic
 Seeder Machine Operator; TRENCHING MACHINE: Oiler; Grade Oiler;
 TUNNEL: Conveyor operator; Air filtration equipment operator

 IRON0086A 07/01/2002

	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
IRONWORKERS	26.72	11.80

IRON0086C 07/01/2002

	Rates	Fringes
CALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
IRONWORKERS	27.22	11.80

LAB00001I 06/01/2002

	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
LABORERS:		
ZONE 1:		
GROUP 1	14.79	6.20
GROUP 2	17.11	6.20
GROUP 3	18.83	6.20
GROUP 4	19.31	6.20
GROUP 5	19.67	6.20

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):
 ZONE 2 - \$.70
 ZONE 3 - \$1.00

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE,
 AND YAKIMA

ZONE 1 - Projects within 25 radius miles of the respective city
 hall
 ZONE 2 - More than 25 but less than 45 radius miles from the
 respective city hall
 ZONE 3 - More than 45 radius miles from the respective city hall

CALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON,
 PACIFIC (North of a straight line made by extending the north
 boundary of Wahkiakum County west to the Pacific Ocean), PIERCE,
 SNOHOMISH AND THURSTON COUNTIES

LABORERS:
 ZONE 1:

GROUP 1	17.71	6.20
GROUP 2	20.03	6.20

GROUP 3	24.71	6.20
GROUP 4	25.19	6.20
GROUP 5	25.55	6.20

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$.70

ZONE 3 - \$1.00

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT,
SEATTLE, KENT, TACOMA, OLYMPIA,
CENTRALIA, ABERDEEN, SHELTON, PT.
TOWNSEND, PT. ANGELES, AND BREMERTON

ZONE 1 - Projects within 25 radius miles of the respective city

hall

ZONE 2 - More than 25 but less than 45 radius miles from the
respective city hall

ZONE 3 - More than 45 radius miles from the respective city hall

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window
Washer/Cleaner (detail clean-up, such as but not limited to
cleaning floors, ceilings, walls, windows, etc., prior to final
acceptance by the owner)

GROUP 2: Batch Weighman; Crusher Feeder; Fence Laborer;
Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating
Screed; Asbestos Abatement Laborer; Ballast Regulator Machine;
Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement
Finisher Tender; Change House or Dry Shack; Chipping Gun (under
30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete
Form Stripper; Curing Laborer; Demolition (wrecking and moving
including charred material); Ditch Digger; Dump Person; Fine
Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout
Machine Tender; Grinders; Guardrail Erector; Hazardous Waste
Worker (Level C); Maintenance Person; Material Yard Person; Pot
Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer;
Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job
site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.);
Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete
Saw Operator; Drill Operator (hydraulic, diamond, aiartrac);
Faller and Bucker Chain Saw; Grade Checker and Transit Person;
Groutmen (pressure) including post tension beams; Hazardous Waste
Worker (Level B); High Scaler; Jackhammer; Laserbeam Operator;
Manhole Builder-Mudman; Mortarman and Hodcarrier; Nozzleman
(concrete pump, green cutter when using combination of high
pressure air and water on concrete and rock, sandblast, gunite,
shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe
Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert
type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power;
Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20'); Spreader
(concrete); Tamper and Similar electric, air and glas operated

tool; Timber Person-sewer (lagger shorer and cribber);
Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Miner; Powderman; Re-Timberman;
Hazardous Waste Worker (Level A).

LAB00238I 06/01/2002
Rates Fringes
CHELAN COUNTY
HOD CARRIERS 21.55 5.50

LAB00335C 06/01/2002
Rates Fringes
PACIFIC (South of a straight line made by extending the north
Boundary line of Wahkiakum County west to the Pacific Ocean)
COUNTY

ZONE 1:

LABORERS:

GROUP 1	23.43	6.15
GROUP 2	23.94	6.15
GROUP 3	24.33	6.15
GROUP 4	24.66	6.15
GROUP 5	21.26	6.15
GROUP 6	19.16	6.15
GROUP 7	16.40	6.15

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Plant Laborers; Asphalt Spreaders;
Batch Weighman; Broomers; Brush Burners and Cutters; Car and
Truck Loaders; Carpenter Tender; Change-House Man or Dry Shack
Man; Choker Setter; Clean-up Laborers; Curing-concrete;
Demolition, Wrecking, and Moving Laborers; Dumpers,
road oiling crew; Dumpmen (for grading crew); Elevator Feeders;
Guard Rail, Median Rail, Reference Post, Guide Post, Right-of-way
Marker; Fine Graders; Fire Watch; Form Strippers (not swinging
stages); General Laborers; Hazardous Waste Worker; Leverman or
Aggregate Spreader (Flaherty and similar types); Loading
Spotters; Material Yard Man (including electrical); Pittsburgh
Chipper Operator or similar types; Railroad Track Laborers;
Ribbon Setters (including steel forms); Rip Rap Man (hand
placed); Road Pump Tender; Sewer Laborer; Signalman; Skipman;
Slopers; Spraymen; Stake Chaser; Stockpiler; Tie Back Shoring;
Timber Faller and Bucker (hand labor); Toolroom Man (at job
site); Tunnel Bullgang (above ground); Weight-Man-Crusher
(aggregate when used)

GROUP 2: Applicator (including pot power tender for same),
applying protective material by hand or nozzle on utility lines
or storage tanks on project; Brush (power saw); Burners;
Choker Splicer; Clary Power Spreader and similar types;
Clean up-nozzleman-Green cutter (concrete, rock, etc.); Concrete

Laborer; Concrete Power Buggyman; Crusher Feeder; Demolition and Wrecking Charred Materials; Guniting Nozzleman Tender; Guniting or Sand Blasting Pot Tender; Handlers or Mixers of all Materials of an irritating nature (including cement and lime); Pipe Doping & Wrapping; Tool Operators (includes but not limited to: Dry pack machine, Jackhammer, Chipping guns, Paving breakers); Post Hole Digger, air, gas or electric; Vibrating Screed; Tampers; Sand Blasting (wet); Stake-Setter; Tunnel-Muckers, Brakemen, Concrete Crew, Bull gang (Underground)

GROUP 3: Asbestos Removal (structural removal only); Bit Grinder; Drill Doctor; Drill Operators, air tracks cat drills, wagon drills, rubber-mounted drills, and other similar types;

Concrete Saw Operator; Guniting Nozzleman; High scalers, strippers and drillers (covers work in swinging stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping); Manhole Builder; Powdermen; Power Saw Operators (Bucking and Falling); Pumpcrete Nozzlemen; Sand Blasting (dry); Sewer Timberman; Track Liners; Anchor Machines; Ballast Regulators; Multiple Tampers; Power Jacks; Tugger Operator; Tunnel-Chuck Tenders, Nippers and Timberman; Vibrator; Water Blaster

GROUP 4: Asphalt Raker; Concrete Saw Operator (walls); Concrete Nozzelman; Grade Checker; Pipelayer; Laser Beam (Tunnel) applicable when assigned to move, set up, align laser beam; Miner-Tunnel; Motorman-dinky Locomotive-Tunnel; Powderman-Tunnel; Shield Operator-Tunnel

GROUP 5: Traffic Flaggers

GROUP 6: Fence Builders

GROUP 7: Landscaping and Planting Laborers

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$0.65
ZONE 3 - 1.15
ZONE 4 - 1.70
ZONE 5 - 2.75

ZONE DEFINITIONS

BASE POINTS: GOLDENDALE, LONGVIEW, AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city hall
ZONE 2: More than 30 miles but less than 40 miles from the respective city hall.
ZONE 3: More than 40 miles but less than 50 miles from the respective city hall.
ZONE 4: More than 50 miles but less than 80 miles from the respective city hall.
ZONE 5: More than 80 miles from the respective city hall.

LAB00335K 06/01/2002		
	Rates	Fringes
PACIFIC(south of a straight line made by extending the north boundary of Wahkiakum County west to the Pacific Ocean)		
HOD CARRIERS	25.04	6.15

PAIN0005A 07/01/2002		
	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
PAINTERS	23.27	5.36

PAIN0005C 06/10/2002		
	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
DRYWALL FINSIHERS	26.18	10.46

PAIN0005H 07/01/2002		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
PAINTERS:		
BRUSH, PAPERHANGER, STEAM-CLEANING, STRIPING and SPRAY	18.97	5.32
TV, RADIO, ELECTRICAL TRANSMISSION TOWERS	20.72	5.32

PAIN0005P 06/01/2002		
	Rates	Fringes
CALLAM, GRAYS HARBOR, JEFFERSON, LEWIS, MASON, PACIFIC (NORTHERN PORTION), PIERCE AND THURSTON COUNTIES		
SOFT FLOOR LAYERS	21.47	7.92

PAIN0054G 09/01/2002		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
GLAZIERS	18.32	3.17

PAIN0054I 06/01/2002		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
DRYWALL FINISHER (TAPER)	20.88	5.16

PAIN0055M 07/15/2002		
	Rates	Fringes
PACIFIC COUNTY		
DRYWALL FINISHERS	26.11	9.12

PAIN0055N 07/01/2002		
	Rates	Fringes
PACIFIC COUNTY		
PAINTERS:		
Brush & Roller	17.35	5.08
Spray and Sandblasting	17.95	5.08
High work - All work		
60 ft. or higher	18.10	5.08

PAIN0188A 01/01/2003		
	Rates	Fringes
CLALLAM, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
GLAZIERS	28.35	9.11

PAIN0188B 01/01/2003		
	Rates	Fringes
GRAYS HARBOR AND PACIFIC COUNTIES		
GLAZIERS	12.95	7.07

PAIN1238D 06/01/2002		
	Rates	Fringes
KING, KITSAP AND SNOHOMISH COUNTIES		
SOFT FLOOR LAYERS	22.64	7.94

PLAS0072C 06/01/2002		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
Zone 1:		
CEMENT MASONS	21.51	5.98

Zone Differential (Add to Zone 1 rates): Zone 2 - \$2.00

BASE POINTS: Spokane, Pasco, Moses Lake, and Lewiston

Zone 1: 0 - 45 radius miles from the main post office

Zone 2: 45 radius miles from the main post office

PLAS0082D 06/01/2002

	Rates	Fringes
PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean) COUNTY		

PLASTERERS	25.64	7.13
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PLAS0528B 12/01/2002

	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum Count, west to the Pacific Ocean), PIERCE, SNOHOMISH AND THURSTON COUNTIES		

CEMENT MASONS	28.05	9.84
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PLUM0032A 06/01/2002

	Rates	Fringes
CHELAN AND KITTITAS (NORTHERN TIP) COUNTIES		

PLUMBERS AND PIPEFITTERS	26.13	10.23
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PLUM0032B 01/01/2003

	Rates	Fringes
CLALLAM, KING AND JEFFERSON COUNTIES		

PLUMBERS AND PIPEFITTERS	34.18	12.68
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PLUM0082D 08/01/2002

	Rates	Fringes
GRAYS HARBOR, LEWIS, MASON (EXCLUDING NE SECTION), PACIFIC, PIERCE AND THURSTON COUNTIES		

PLUMBERS AND PIPEFITTERS	29.60	11.62
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PLUM0265A 08/01/2002

	Rates	Fringes
SNOHOMISH COUNTY		

PLUMBERS AND PIPEFITTERS:	29.00	11.62
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PLUM0598B 06/01/2002

	Rates	Fringes
KITTITAS (ALL BUT NORTHERN TIP)		

PLUMBERS AND PIPEFITTERS	29.85	12.59

PLUM0631A 08/01/2002		
	Rates	Fringes
MASON (NE SECTION), AND KITSAP COUNTIES		
PLUMBERS/PIPEFITTERS: All new construction, additions, and remodeling of commercial building projects such as: cocktail lounges and taverns, professional buildings, medical clinics, retail stores, hotels and motels, restaurants and fast food types, gasoline service stations, and car washes where the plumbing and mechanical cost of the project is less than \$100,000	19.20	4.58
All other work where the plumbing and mechanical cost of the project is \$100,000 and over	27.84	11.62

ROOF0054A 06/01/2002		
	Rates	Fringes
CLALLAM, JEFFERSON, KING, KITSAP, MASON AND SNOHOMISH COUNTIES		
ROOFERS	25.37	8.41

ROOF0153A 01/01/2003		
	Rates	Fringes
GRAYS HARBOR, LEWIS, PACIFIC, PIERCE AND THURSTON COUNTIES		
ROOFERS	25.25	6.69

ROOF0189A 07/01/2002		
	Rates	Fringes
CHELAN COUNTY		
ROOFERS	20.15	6.15

ROOF0189E 07/01/2002		
	Rates	Fringes
KITTITAS COUNTY		
ROOFERS	20.47	5.90

WA030002 - 1

SFWA0699B 07/01/2002

	Rates	Fringes
KING, KITSAP, PIERCE, SNOHOMISH AND THURSTON COUNTIES		

SPRINKLER FITTERS	33.04	11.25
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SHEE0066D 06/01/2002

	Rates	Fringes
CHELAN COUNTY		

SHEET METAL WORKERS	24.04	7.93
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SHEE0066F 12/01/2002

	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC, PIERCE, SNOHOMISH AND THURSTON COUNTIES		

SHEET METAL WORKERS	30.90	11.75
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SHEE0066M 06/01/2002

	Rates	Fringes
KITTTITAS COUNTY		

SHEET METAL WORKERS	25.88	9.90
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TEAM0174B 06/01/2002

	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), PIERCE, SNOHOMISH AND THURSTON COUNTIES		

TRUCK DRIVERS:

ZONE A:

GROUP 1:	25.79	9.68
GROUP 2:	25.21	9.68
GROUP 3:	22.81	9.68
GROUP 4:	18.56	9.68
GROUP 5:	25.55	9.68

ZONE B (25-45 miles from center of listed cities*):

Add \$.70 per hour to Zone A rates.

ZONE C (over 45 miles from centr of listed cities*):

Add \$1.00 per hour to Zone A rates.

*Zone pay will be calculated from the city center of the following listed cities:

BELLINGHAM	CENTRALIA	RAYMOND	OLYMPIA
EVERETT	SHELTON	ANACORTES	BELLEVUE
SEATTLE	PORT ANGELES	MT. VERNON	KENT
TACOMA	PORT TOWNSEND	ABERDEEN	BREMERTON

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 - "A-frame or Hydralift" trucks and Boom trucks or similar equipment when "A" frame or "Hydralift" and Boom truck or similar equipment is used; Buggymobile; Bulk Cement Tanker; Dumpsters and similar equipment, Tournorockers, Tournowagon, Turnotrailer, Cat DW series, Terra Cobra, Le Tourneau, Westinghouse, Athye Wagon, Euclid Two and Four-Wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump Trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with

16 yards to 30 yards capacity: Over 30 yards \$.15 per hour additional for each 10 yard increment; Explosive Truck (field mix) and similar equipment; Hyster Operators (handling bulk loose aggregates); Lowbed and Heavy Duty Trailer; Road Oil Distributor Driver; Spreader, Flaherty Transit mix used exclusively in heavy construction; Water Wagon and Tank Truck-3,000 gallons and over capacity

GROUP 2 - Bulllifts, or similar equipment used in loading or unloading trucks, transporting materials on job site; Dumpsters, and similar equipment, Tournorockers, Tournowagon, Turnotrailer, Cat. D.W. Series, Terra Cobra, Le Tourneau, Westinghouse, Athye wagon, Euclid two and four-wheeled power tractor with trailer and similar top-loaded equipment transporting material, Dump trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with less than 16 yards capacity; Flatbed: (Dual Rear Axle); Grease Truck, Fuel Truck, Greaser, Battery Service Man and/or Tire Service Man; Leverman and loader at bunkers and batch plants; Oil tank transport; Scissor, Slurry Truck; Sno-Go and similar equipment; Swampers; Straddler Carrier (Ross, Hyster) and similar equipment; Team Driver; Tractor (small rubber-tired (when used within Teamster jurisdiction); Vacuum truck; Water Wagon and Tank trucks-less than 3,000 gallons capacity; Winch truck; Wrecker, tow truck and similar equipment

GROUP 3 - Flatbed: single rear axle; Pickup sweeper, Pickup Truck (Adjust upward by \$2.00 per hour for onsite work)

GROUP 4 - Escort or pilot driver

GROUP 5 - Mechanic

HAZMAT PROJECTS

Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C: +\$.25 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B: +\$.50 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit."

LEVEL A: +\$.75 per hour - This level utilizes a fully-encapsulated suit with a self-contained breathing apparatus or a supplied air line.

TEAM0760F 06/01/2002

	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		

(ANYONE WORKING ON HAZMAT
JOBS SEE FOOTNOTE A BELOW)

TRUCK DRIVERS:

GROUP 1	19.33	8.50
GROUP 2	21.97	8.50
GROUP 3	22.08	8.50
GROUP 4	22.41	8.50
GROUP 5	22.52	8.50
GROUP 6	22.68	8.50
GROUP 7	23.22	8.50
GROUP 8	23.54	8.50

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Escort Driver or Pilot Car; Employee Haul; Power Boat
Hauling Employees or Material

GROUP 2: Fish Truck; Flat Bed Truck; Fork Lift (3000 lbs. and
under); Trailer Mounted Hydro Seeder and Mulcher; Leverperson
(loading trucks at bunkers); Seeder & Mulcher; Stationary Fuel
Operator; Tractor (small, rubber-tired, pulling trailer or
similar equipment)

GROUP 3: Auto Crane (2000 lbs. capacity); Buggy Mobile &
Similar; Bulk Cement Tanks & Spreader; Dumptor (6 yds. & under);
Flat Bed Truck with Hydraulic System; Fork Lift (3001-16,000
lbs.); Fuel Truck Driver; Steamcleaner & Washer; Power Operated
Sweeper; Rubber-tired Tunnel Jumbo; Scissors Truck; Slurry Truck
Driver; Straddle Carrier (Ross, Hyster, & similar); Tireperson;
Transit Mixers & Truck Hauling Concrete (3 yd. to & including 6
yds.); Trucks, side, end, bottom and articulated end dump (3
yards to and including 6 yds.); Warehouseperson (to include
shipping & receiving); Wrecker & Tow Truck

GROUP 4: A-Frame; Burner, Cutter, & Welder; Service Greaser;
Trucks, side, end, bottom and articulated end dump (over 6 yds.
to & including 12 yds.); Truck Mounted Hydro Seeder;
Warehouseperson; Water Tank truck (0-8000 gallons)

GROUP 5: Dumpster (over 6 yds.); Lowboy (50 tons & under); Self-
Loading Roll Off; Semi-Truck & Trailer; Tractor with Steer
Trailer; Transit Mixers and Trucks Hauling Concrete (over 6 yds.
to and including 10 yds.); Trucks, side, end, bottom and
articulated end dump (over 12 yds. to & including 20 yds.);
Truck-Mounted Crane (with load bearing surface either mounted or
pulled)(up to 14 ton); Vacuum Truck (super sucker, guzzler, etc.)

GROUP 6: Flaherty Spreader Box Driver; Flowboys; Fork Lift
(over 16,000 lbs.); Dumps (Semi-end); Lowboy (over 50 tons);
Mechanic (Field); Transfer Truck and Trailer; Transit Mixers &

Trucks Hauling Concrete (over 10 yds. to & including 20 yds.); Trucks, side, end, bottom and end dump (over 20 yds. to & including 40 yds.); Truck and Pup; Tournarocker, DW's & similar with 2 or more 4 wheel-power tractor with trailer, gallonage or yardage scale, whichever is greater; Water Tank Truck (8,001-14,000 gallons)

GROUP 7: Oil Distributor Driver; Stringer Truck (cable operated trailer); Transit Mixers & Hauling Concrete (over 20 yds.);

Truck, side, end, bottom and articulated end dump (over 40 yds. to & including 100 yds.); Truck Mounted Crane (with load bearing surface either mounted or pulled (16 through 25 tons)

GROUP 8: Prime Movers and Stinger Truck; Trucks, side, end, bottom and articulated end dump (over 100 yds.); Helicopter Pilot Hauling Employees or Materials

Footnote A- Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in additon to the classification working in as follows:

LEVEL D: - \$.25 PER HOUR (This is the lowest level of protection.

No respirator is used and skin protection is minimal.

LEVEL C: - \$.50 PER HOUR (This level uses an air purifying respirator or additional protective clothing.

LEVEL B: - \$.75 PER HOUR (Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "spash suit."

LEVEL A: - \$1.00 PER HOUR (this level utilizes a fully-encapsulated suit with a self-contained breathing apparatus or a supplied air line.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.
=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a

- position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests

for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U. S. Department of Labor
200 Constitution Avenue, N. W.
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.
END OF GENERAL DECISION

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SECTION 01270

PAYMENT

PART 1 GENERAL

1.1 GENERAL

The contract price for each item shall constitute full compensation for furnishing all plant, labor, materials, appurtenances, and incidentals and performing all operations necessary to construct and complete the items in accordance with these specifications and the applicable drawings, including surveying performed by the Contractor. Payment for each item shall be considered as full compensation, notwithstanding that minor features may not be mentioned herein. Work paid for under one item will not be paid for under any other item. No separate payment will be made for the work, services, or operations required by the Contractor, as specified in DIVISION 1, GENERAL REQUIREMENTS, to complete the project in accordance with these specifications; all costs thereof shall be considered as incidental to the work.

1.2 PAYMENT

1.2.1 ITEM NO. 0001 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0001, All Work for Construction of the Battle Simulation Center within a line 5 feet outside of the building exterior walls, except for Optional Items 0007, 0008 and 0009, payment of which shall constitute full compensation for Item No. 0001, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction. See Option Items 0007, 0008, 0011 and 0012 for work referenced in this item.

1.2.2 ITEM NO. 0002 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0002, Construction of all Site Work and Utility Work from a line 5 feet outside of the building exterior walls, except for Optional Items 0010 through 0015, payment of which shall constitute full compensation for Item No. 0002, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

1.2.3 ITEM NO. 0003 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0003, All Work for As-Built Drawings in Electronic Format as specified in Section 01702 from preparation to final approval, payment of which shall constitute full compensation for Item No. 0003, complete. No partial or total payment will be made for this item until the as-built drawings, both marked up blue prints and electronic files are fully approved by the Government (A or B action) and all copies of approved drawings and electronic media received by the Government. The dollar amount specified in the Bid Schedule may not necessarily reflect the bidder's actual costs for doing this work.

1.2.4 ITEM NO. 0004 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0004, All Work for O&M Manuals as specified in Section 01701 from preparation to final approval, payment of which shall constitute full compensation of Item No. 0003 complete. No partial or total payment will be made for this item until all O&M manuals are fully approved by the Government (A or B action) and all copies of final manuals are received by the Government in their final binders. The dollar amount specified in the Bid Schedule may not necessarily reflect the bidder's actual costs for doing this work.

1.2.5 ITEM NO. 0005 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0005, All Work for Form 1354 Checklist and Equipment in Place List as specified in Sections 01704 and 01705 from preparation to final approval, payment of which shall constitute full compensation of Item No. 0004 complete. No partial or total payment will be made for this item until both the 1354 Checklist and Equipment in Place List are fully approved by the Government (A or B action) and all copies of approved lists received by the Government. The dollar amount specified in the Bid Schedule may not necessarily reflect the bidder's actual costs for doing this work.

1.2.6 ITEM NO. 0006 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0006, Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the First Year after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance, payment of which shall constitute full compensation for Item No. 0006, complete.

1.2.7 ITEM NO. 0007 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0007, All Work for Construction of OPERABLE PARTITIONS, listed as doors D122A2, D122B2, D122C2, D122D2, D122E2, D122F2, D122G2 AND D122H2, and subsequent passage doors D122A4, D122B3, D122C4, D122D3, D122E4, D122F3, D122G4 and D122H3, identified as option item on the drawings, in lieu of extension of Wall Type 10F into intended openings and door assemblies designated to be D300, payment of which shall constitute full compensation for Item No. 0007, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

Associated work that is part of Base Item 0001, and is not to be construed as part of Item No. 0007, includes but is not limited to the following:

Operable partition support framing, including WF beam support member and associated bracing, as shown in detail 8 on Sheet A-511, and as indicated on Structural drawing S-113.

1.2.8 ITEM NO. 0008 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0008, All Work for Construction of the SUSPENDED CATWALK AND ASSOCIATED STAIRS, identified as an

option on the drawings, in lieu of extension of adjacent wall types through door locations, as indicated on Plates A-106 and A-107, payment of which shall constitute full compensation for Item No. 0008, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

This item includes but is not limited to: All catwalk framing members, including steel supports, hangers and metal grating, as indicated on S-401, Catwalk framing plan and sections. Work includes stairs as depicted in Structural drawings, and as indicated on Plate A-410. Work also includes Doors D200A1, D200A2, D200B1, D200B2, D200C1, D200D1 and D200D2. Catwalk is also depicted in Architectural Sections on Plates A-309, A-310, A-314 and A-315.

Associated work that is part of Base Item 0001, and is not to be construed as part of this option item, includes but is not limited to the following:

Roof access platform through Mechanical Room 115A, as indicated on Structural drawing S-402, and on Architectural drawing A-411.

1.2.9 ITEM NO. 0009 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0009, All Work for Construction of the ROOF PAVER SYSTEM, identified as option item on the drawings, in lieu of 30" walking matt membrane that is shown dashed, and noted on Roof Plan, A-109, payment of which shall constitute full compensation for Item No. 0009, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

1.2.10 ITEM NO. 0010 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0010, All Work for Design and Construction of the Concrete Pad, Pad Mounted EMERGENCY GENERATOR, Associated Underground Site Work, Connections and Equipment, as specified, payment of which shall constitute full compensation for Item No. 0010, complete. This item includes concrete pad extension and extension of CMU screenwall. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

~~Drawings and specifications describing the work of Item No. 0010 are forthcoming and will be issued in a future amendment.~~

Drawings and specifications describing the work of Item No. 0010 were issued in Amendment R0002 and contained, but are not limited to the following:

Revisions to Sheet 236, Plate E-600

Added Specification 16264 - Diesel-Generator Set, Stationary

Added Specification 16410 - Automatic Transfer Switch

Drawing Changes By Notation – C-101, S-100, S-103, S-403, E-101, E-400 and E-603

Sketches attached to 00800 – SD-1 and SD-2 of pad and wall expansion

1.2.11 ITEM NO. 0011 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0011, All Work for Construction of REINFORCED HARDENED DRIVABLE TURF (RHDT), identified as an option

on the drawings, payment of which shall constitute full compensation for Item No. 0011, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

Associated work that is part of Base Item 0001, and is not to be construed as part of Item No. 0011, includes but is not limited to the following:

All base and top course materials listed in Detail A, Sheet C-510, including satisfactory cohesionless materials below engineered aggregate base material, engineered aggregate base material, and topsoil, as well as the hydroseeding indicated on L-103.

1.2.12 ITEM NO. 0012 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0012, All Work for Construction of the LANDSCAPING AND IRRIGATION, identified as an option on the drawings, payment of which shall constitute full compensation for Item No. 0012, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

Associated work that is part of Base Item 0001, and is not to be construed as part of Item No. 0012, includes but is not limited to the following:

Soil preparation for entire site, mulch, seeding, stub out for irrigation system and all sleeving under pavement sections.

1.2.13 ITEM NO. 0013 (OPTION ITEM)

Payment will be made at the contract lump sum prices for Item No. 0013, All Work for Construction of COMMUNICATION DUCTS across the access loop road, to the south of the building, identified as an option on the drawings, payment of which shall constitute full compensation for Item No. 0013, complete. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

This item includes but is not limited to the following: Ten (10) Communication Line Duct Assemblies in locations indicated on C-105 (These are indicated by a symbol for a communications pull box on either side of the PCC paving of the access loop, and a connecting line duct), and as detailed in detail R-20 as shown on sheet C-508. Note: Details Number references have been corrected on Sheet C-508, by amendment R0010.

For clarification, the work of "Comm. Connection at Building 2003, Sheet 168a, Plate A-704", is **NOT** part of this option item, per the note in amendment R0007, and the note that stated such, has been removed by amendment R0010.

1.2.14 ITEM NO. 0014 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0014, All Work for Design and Construction of the Concrete Pad, PAD MOUNTED PROPANE TANK, and associated underground piping, valves and equipment to establish an alternate fuel source for the project, as specified, payment of which shall constitute full compensation for Item No. 0014, complete.

Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

~~Drawings and specifications describing the work of Item No. 0014 are forthcoming and will be issued in a future amendment.~~

Drawings and specifications describing the work of Item No. 0014 were issued in Amendment R0002 and contained, but are not limited to the following:

Added Drawing "Gasline Plan, Profile and Details, Sheet 204A, Plate P-110

1.2.15 ITEM NO. 0015 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0015, All Work for Design and Construction of a PRE-FABRICATED STEEL STORAGE BUILDING, Concrete Pad and Footings, as specified, payment of which shall constitute full compensation for Item No. 0015, complete. This storage structure is to replace the existing storage structure found on the Site and is to be installed at Ft. Lewis, Washington, in a location to be determined by the Contracting Officer. Work includes all labor, materials, equipment and transportation, and other work as required to complete construction.

~~Drawings and specifications describing the work of Item No. 0015 are forthcoming and will be issued in a future amendment.~~

Drawings and specifications describing the work on Item No. 0015 were issued in Amendment R0001 and contained, but are not limited to the following:

Added Specification Section 13122 Metal Building System and Foundation.

Specification Section 13122 contained (5) sketches attached to the end of the section.

1.2.16 ITEM NO. 0016 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0016, Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the Second Year after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance, payment of which shall constitute full compensation for Item No. 0016, complete.

1.2.17 ITEM NO. 0017 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0017, Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the Third Year after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance, payment of which shall constitute full compensation for Item No. 0017, complete.

1.2.18 ITEM NO. 0018 (OPTION ITEM)

Payment will be made at the contract lump sum price for Item No. 0018, Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the Fourth Year after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance, payment of which shall constitute full compensation for Item No. 0018, complete.

1.2.19 ITEM NO. 0019 (BASE ITEM)

Payment will be made at the contract lump sum price for Item No. 0019, Provide all supervision, personnel, equipment, transportation, material, and other items and services necessary to operate, service and maintain the Battle Simulation Center, Fort Lewis, Washington for the Fifth Year after completion of construction in accordance with the requirements specified in Technical Specification 01830 Operation and Maintenance, payment of which shall constitute full compensation for Item No. 0019, complete.

1.3 PROGRESS PAYMENT INVOICE

1.3.1 Construction

During the construction phase of this contract, requests for payment shall be submitted in accordance with Federal Acquisition Regulations (FAR) Subpart 32.9, entitled "PROMPT PAYMENT", and Paragraphs 52.232-5 and 52.232-27, entitled "Payments Under Fixed-Price Construction Contracts", and "Prompt Payment for Construction Contracts", respectively. In addition each request shall be submitted in the number of copies and to the designated billing office as shown in the Contract.

1.3.2 Operation and Maintenance

During the O&M phase of this contract, the Contractor will be paid for services ordered and accepted in accordance with the following contract clauses in SECTION 00700: Payments (FAR 52.232-1), Discounts for Prompt Payment (FAR 52.232-8), Limitations on Withholding of Payments (FAR 52.232-9), Extras (FAR 52.232-11), and Prompt Payment (FAR 52.232-25).

PARTS 2 and 3 NOT USED

PROGRESS PAYMENT INVOICE

See Federal Acquisition Regulations (FAR) 32.900, 52.232-5, & 52.232-27

1. PROJECT AND LOCATION		2. DATE	
3. CONTRACTOR NAME AND ADDRESS (Must be the same as in the Contract)		4. CONTRACT NO. _____	
		5. INVOICE NO. _____	
6. DESCRIPTION OF WORK		7. PERIOD OF PERFORMANCE From: To:	
8. DISCOUNT TERMS			
9. OFFICIAL TO WHOM PAYMENT IS TO BE FORWARDED Name: Title: Phone: () -		10. OFFICIAL TO BE NOTIFIED OF DEFECTIVE INVOICE Name: Title: Phone () -	
<p>11. CERTIFICATION: I hereby certify, to the best of my knowledge and belief, that</p> <p>(1) The amounts requested are only for the performance in accordance with the specifications, terms, and conditions of this contract;</p> <p>(2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification,</p> <p>in accordance with subcontract agreements and the requirements of Chapter 39 of Title 31, United States Code;</p> <p>and</p> <p>(3) This request for progress payment does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.</p>			
_____ (Signature)		_____ (Title)	
		_____ (Date)	
12. OTHER INFORMATION OR DOCUMENTATION required by Contract. Provide two (2) copies of each (check and attach if applicable):		(FOR GOVERNMENT USE ONLY)	
<input type="checkbox"/> Updated Progress Chart/Schedule <input type="checkbox"/> Progress Narrative <input type="checkbox"/> Certified Payrolls (submitted weekly) <input type="checkbox"/> Safety Exposure Report <input type="checkbox"/> Updated Submittal Register <input type="checkbox"/> Progress Photos <input type="checkbox"/> Subcontractor/Employee Listings		Retainage: ____% Amt.: \$_____ Withholdings: \$_____ Reason: _____ _____ Following items are current: As-Builts ____ Yes ____ No O & M Manuals ____ Yes ____ No 1354 Data ____ Yes ____ No Submittal Register ____ Yes ____ No	

END OF SECTION

SECTION 01501

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.1 AVAILABILITY AND USE OF UTILITY SERVICES

~~1.1.1 Water~~

The Government will make available to Contractor, from existing outlets and supplies, all reasonably required amounts of ~~potable water without charge~~ utilities, except for natural gas and sanitary provisions. Natural gas requirements at Ft. Lewis shall be coordinated with and obtained from Puget Sound Energy. Unless otherwise provided in the contract, the amount of each utility service obtained from the Government shall be charged to or paid for by the Contractor at prevailing rates determined by the Utility Sales Officer. Contractor shall reasonably conserve ~~potable water~~ any utilities furnished without charge. ~~Contractor, at its own expense, shall install and maintain necessary temporary connections and distribution lines and shall remove the connections and lines prior to final acceptance of construction.~~

1.1.2 The Contractor, at its expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia, and pay all outstanding utility bills.

1.2.3 If utilities are to be purchased from the Government, the contractor shall enter into a utility sales agreement with the Government. Contractor shall furnish, install and maintain all necessary meters, regulating equipment and service connections to the utility system. Plans for all such facilities shall be subject to the approval of the Utilities Sales Officer (or designee) and the installation of such facilities shall be subject to his supervision (or designee's). The Utilities Sales Officer (or designee) shall read the meters. The Installation Utilities Sales Officer can be reached at (253) 966-1741/1738.

~~1.1.2 Electricity~~

~~Electric power will be made available by the Government, without charge, to the Contractor for performing work at the work area. The Contractor shall carefully conserve electricity furnished. The Contractor, at its own expense and in a workmanlike manner satisfactory to the Contracting Officer, shall extend the existing electrical distribution system (overhead and underground) for temporary electrical service to the worksite, shall install and maintain necessary temporary connections, and shall remove the same prior to final acceptance of the construction.~~

1.2 SANITARY PROVISIONS

Contractor shall provide sanitary accommodations for the use of employees as may be necessary and shall maintain accommodations approved by the Contracting Officer and shall

comply with the requirements and regulations of the State Health Department, County Sanitarian, or other authorities having jurisdiction.

1.3 TEMPORARY ELECTRIC WIRING

1.3.1 Temporary Power and Lighting

The Contractor shall provide construction power facilities in accordance with the safety requirements of the National Electric Code NFPA No. 70 and the SAFETY AND HEALTH REQUIREMENTS MANUAL EM 385-1-1. The Contractor, or its delegated subcontractor, shall enforce the safety requirements of electrical extensions for the work of subcontractors. Work shall be accomplished by journeyman electricians.

1.3.2 Construction Equipment

In addition to the requirements of SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1, temporary wiring conductors installed for operation of construction tools and equipment shall be either Type TW or THW contained in metal raceways, or shall be hard usage or extra hard usage multiconductor cord. Temporary wiring shall be secured above the ground or floor in a workmanlike manner and shall not present an obstacle to persons or equipment. Open wiring may only be used outside of buildings, and then only in accordance with the provisions of the National Electric Code.

1.3.3 Submittals

Submit detailed drawings of temporary power connections. Drawings shall include, but not be limited to, main disconnect, grounding, service drops, service entrance conductors, feeders, GFCI'S, and all site trailer connections.

1.4 FIRE PROTECTION

During the construction period, the Contractor shall provide fire extinguishers in accordance with the safety requirements of the SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1. The Contractor shall remove the fire extinguishers at the completion of construction.

1.5 STAGING AREA

Contractor will be provided adequate open staging area as directed by the Contracting Officer. Area is unsecured, and Contractor shall make provisions for its own security.

Contractor shall be responsible for keeping staging area, and office area clean and free of weeds and uncontrolled vegetation growth. Weeds shall be removed by pulling or cutting to within 1-inch of ground level. Lawn areas shall be mown to keep growth to less than 2-inches. All loose debris and material subject to being moved by prevailing winds in the area shall be picked up or secured at all times.

If the area is not maintained in a safe and clean condition as defined above the Contracting Officer may have the area cleaned by others with the costs being deducted from the Contractor's payment.

1.6 HOUSEKEEPING AND CLEANUP

Pursuant to the requirements of Clause CLEANING UP and Clause ACCIDENT PREVENTION, of the CONTRACT CLAUSES, the Contractor shall assign sufficient personnel to ensure compliance. The Contractor shall submit a detailed written plan for implementation of this requirement. The plan will be presented as part of the preconstruction safety plan and will provide for keeping the total construction site, structures, and accessways free of debris and obstructions at all times. Work will not be allowed in those areas that, in the opinion of the Contracting Officer, have unsatisfactory cleanup and housekeeping at the end of the preceding day's normal work shift. At least once each day all areas shall be checked by the Quality Control person of the Contractor and the findings recorded on the Quality Control Daily Report. In addition, the Quality Control person shall take immediate action to ensure compliance with this requirement. Housekeeping and cleanup shall be assigned by the Contractor to specific personnel. The name(s) of the personnel shall be available at the project site.

1.7 DIGGING PERMIT

Before performing any onsite excavation, Contractor shall obtain a digging permit. The digging permit can be obtained at Directorate of Public Works, Building 2012, room 110, telephone 253-967-5237, on weekdays between 8 a.m. and 3:30 p.m. Typically it will take a Contractor 3-5 working days to collect all signatures necessary for clearances prior to the permit being issued.

1.8 CONSTRUCTION NEAR COMMUNICATIONS CABLES

1.8.1 Excavation Near Communication Cables

Digging within .9144 meters (3 feet) of communication cables (including fiber optic cables) shall be performed by hand digging until the cable is exposed. The Contracting Officer shall be notified a minimum 3 days prior to digging within a .9144 meter (3-foot) area near cable. The cable route will be marked by the Government prior to excavation in the area. A digging permit shall be obtained by the Contractor before performing any excavation. The Contractor shall be held responsible for any damage to the cable by excavation procedures. Once the cable is exposed, mechanical excavation may be used if there is no chance of damage occurring to the cable.

1.8.2 Reburial of Exposed Utilities

When existing utility lines are reburied a tape, detectable by pipe detector systems, shall be installed above the uncovered length of the utility at a depth of 305 mm (12 inches) below grade. Tape shall be a minimum .127 mm (5 mil) plastic tape with metallic tracer, minimum 76 mm (3 inches) wide, lettering on tape to show buried utility, and brightly colored.

1.8.3 Access to Communications Manhole or Handhole

No communications manhole or handhole shall be entered without first obtaining a fiber optic cable briefing. Coordinate through the Contracting Officer with USAISC, Fort Lewis, Outside Plant Branch, Cable Section, Bldg. 2682.

1.8.4 Cable Cuts or Damage

If a communications cable is cut or damaged the Contractor shall immediately notify the Contracting Officer (CO) and begin gathering personnel and equipment necessary to repair the cut, or damage. Contractor shall begin repairs within one hour of the cut or damage, unless notified otherwise, and continue repairs without interruption until full service is restored.

1.9 PROJECT SIGN

Contractor shall furnish and install two project signs in accordance with conditions hereinafter specified and layout shown on drawing No. 49s-40-05-15, Sheets 1 and 2, except Corps of Engineers' castle and Department of Army seal will be Government furnished. All letters shall be block type, upper case. Letters shall be painted as indicated using exterior-type paint. Sign shall be maintained in excellent condition throughout the life of job. Project sign shall be located as directed. Upon completion of project, sign shall be removed and shall remain the property of Contractor.

1.10 CONCEALED WORK

All items of work to be concealed shall be Government inspected prior to concealment.

1.11 REPAIR OF ROAD CUTS

Asphaltic surface shall be completely in place within 48 hours after placement of base gravel. Between placement of base gravel and pavement, road shall be kept in driveable and passable condition.

1.12 ELEVATED WORK AREAS

Workers in elevated work areas in excess of 2 meters (6 feet) above an adjoining surface require special safety attention. In addition to the provisions of SAFETY AND HEALTH REQUIREMENTS MANUAL, EM 385-1-1, the following safety measures are required to be submitted to the Contracting Officer's Representative. Prior to commencement of work in elevated work areas, the Contractor shall submit drawings depicting all provisions of his positive fall protection system including, but not limited to, all details of guardrails. Positive protection for workmen engaged in the installation of structural steel and steel joist shall be provided by safety nets, tie-offs, hydraulic man lifts, scaffolds, or other required means. Decking crews must be tied-off or work over nets or platforms not over 2 meters (6 feet) below the work area. Walking on beams and/or girders and the climbing of columns is prohibited without positive protection. Perimeter guardrails shall be installed at floor, roof, or wall openings more than 2 meters (6 feet) above an adjoining surface and on roof perimeters. Rails shall be designed to protect all phases of elevated work including, but not limited to, roofing operations and installation of gutters and flashing. Rails around roofs may not be removed until all work on the roof is complete and all traffic on or across the roof ceases. Rails shall be designed by a licensed engineer to provide adequate stability under any anticipated impact loading. As a minimum, the rails shall consist of a top rail at a height of 1067 mm (42 inches), a mid-rail, and a toe board. Use of tie-offs, hydraulic man lifts, scaffolds, or other means of roof edge protection methods may be utilized on small structures such as family housing, prefabricated metal buildings, etc. If safety belts and harnesses are used, the positive fall protection plan will address fall restraint versus fall arrest. Body belts will ONLY be used for fall restraint, they will not be used for fall arrest.

1.13 TRAFFIC CONTROL PLAN

The Contractor shall submit a Traffic Control Plan for moving traffic through and around the construction zone in a manner that is conducive to the safety of motorists, pedestrians, and workers. This plan shall indicate scheduling, placement, and maintenance of traffic control devices in accordance with the U.S. Department of Transportation, Federal Highway Administration publication, Manual on Uniform Traffic Control Devices. The Contractor shall obtain, in writing, from the Directorate of Public Works (PW) Traffic Engineer, through the Contracting Officer, approval of the Traffic Control Plan. The Contractor shall submit his Traffic Control Plan at least 15 working days prior to commencement of street or road work. Streets (except dead end) may be closed to traffic temporarily (except at least one access lane shall be kept open to traffic) by approved written request to the Contracting Officer at least 10 working days prior to street closure. Excavations shall not remain open for more than 1 working day without approval. The Contractor shall identify by site inspection and indicate on the plan all roads and trails used by military or civilian wheeled and tracked vehicular traffic and, by traffic control devices, prevent this traffic from entering the construction zone.

1.14 UTILITIES NOT SHOWN

The Contractor can expect to encounter, within the construction limits of the entire project, utilities not shown on the drawings and not visible as to the date of this contract. The Contractor shall scan the construction site with electromagnetic or sonic equipment, and mark the surface of the ground where existing utilities are discovered. The Contractor shall verify the elevations of existing utilities, piping and any type of underground obstruction not indicated, or indicated and not specified to be removed. If such utilities interfere with construction operations, he shall immediately notify the Contracting Officer verbally and then in writing to enable a determination by the Contracting Officer as to the necessity for removal or relocation. If such utilities are removed or relocated as directed, the Contractor shall be entitled to equitable adjustment for any additional work or delay. The types of utilities the Contractor may encounter are waterlines, sewer lines (storm and sanitary), gas lines, fueling lines, steam lines, buried fuel tanks, septic tanks, other buried tanks, communication lines, cathodic protection cabling, and power lines. These utilities may be active or abandoned utilities.

1.15 GOVERNMENT WITNESSING AND SCHEDULING OF TESTING

The Contractor shall notify the Contracting Officer, by serial letter, of dates and agenda of all performance testing of the following systems: mechanical (including fire protection and EMCS), electrical (including fire protection) medical and food service systems a minimum of 10 calendar days prior to start of such testing. In this notification, the Contractor shall certify that all equipment, materials, and personnel necessary to conduct such testing will be available on the scheduled date and that the systems have been prechecked by him and are ready for performance and/or acceptance testing. Contractor shall also confirm that all operations and maintenance manuals have been submitted and approved. **NO PERFORMANCE AND/OR ACCEPTANCE TESTING WILL BE PERMITTED UNTIL THE OPERATIONS AND MAINTENANCE MANUALS HAVE BEEN APPROVED.**

Government personnel, at the option of the Government, will travel to the site to witness testing. If the testing must be postponed or canceled for whatever reason not the fault of the government, the Contractor shall provide the Government not less than 3 working days advance notice (notice

may be faxed) of this postponement or cancellation. Should this 3 working day notice not be given, the Contractor shall reimburse the Government for any and all out of pocket expenses incurred for making arrangements to witness such testing including, but not limited to airline, rental car, meal, and lodging expenses. Should testing be conducted, but fail and have to be rescheduled for any reason not the fault of the Government, the Contractor shall similarly reimburse the Government for all expenses incurred.

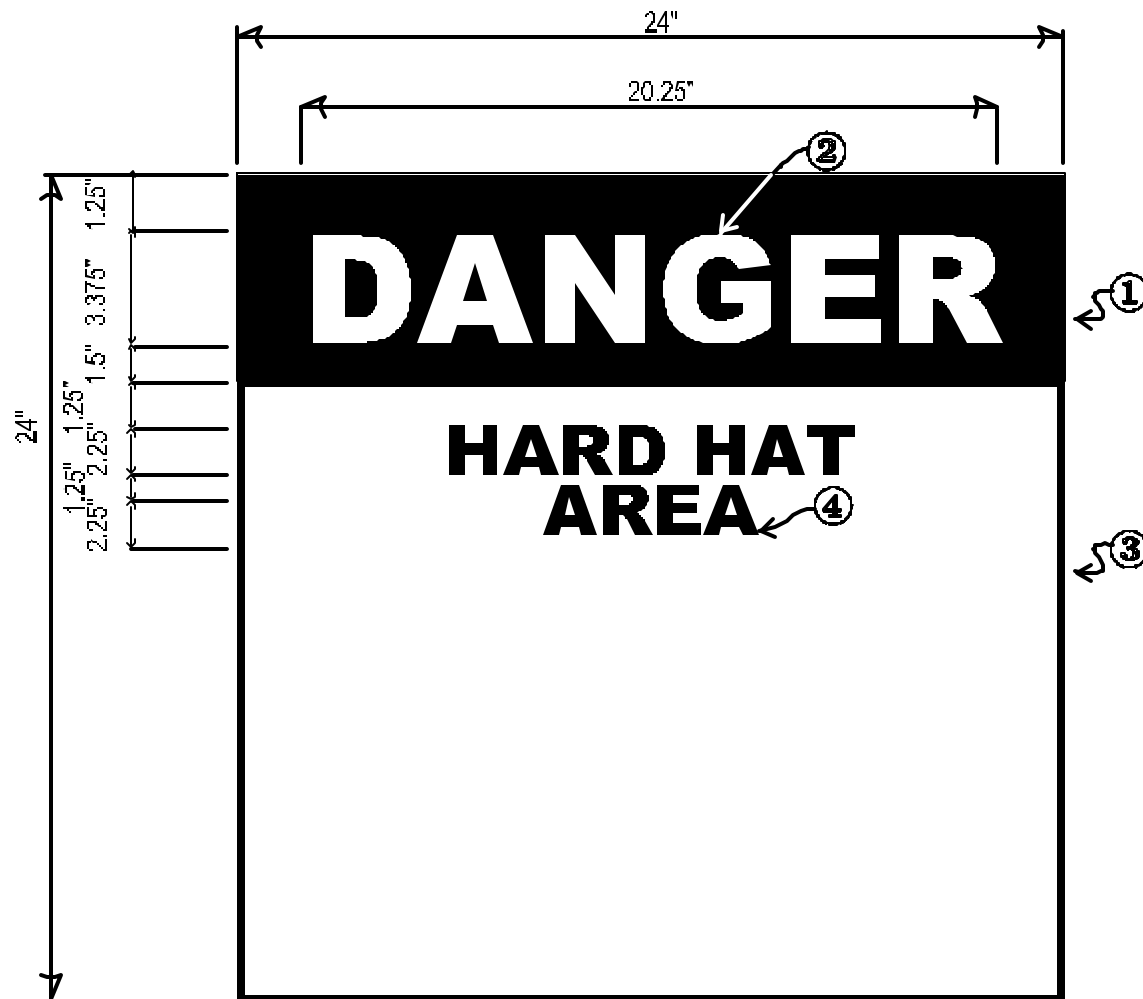
1.16 OFFICE SPACE

The Contractor shall furnish office space of 14' x 70' (2 offices, 1 conference room) with power, water, appropriate office furniture, toilet facilities, heat and air-conditioning, parking lot and sidewalks. Janitorial service shall also be provided. Telephone service shall be provided for the duration of time that the Contractor provides telephone service for himself. The Government will pay only charges for long distance calls made by Government personnel. Contractor shall be responsible for installing all utility hookups, tie downs, skirting, slabs, foundations, steps and landings to meet all local, county, state and federal codes and regulations. The office enclosure and furnishings will remain property of the Contractor and shall be removed from the site upon completion of the project.

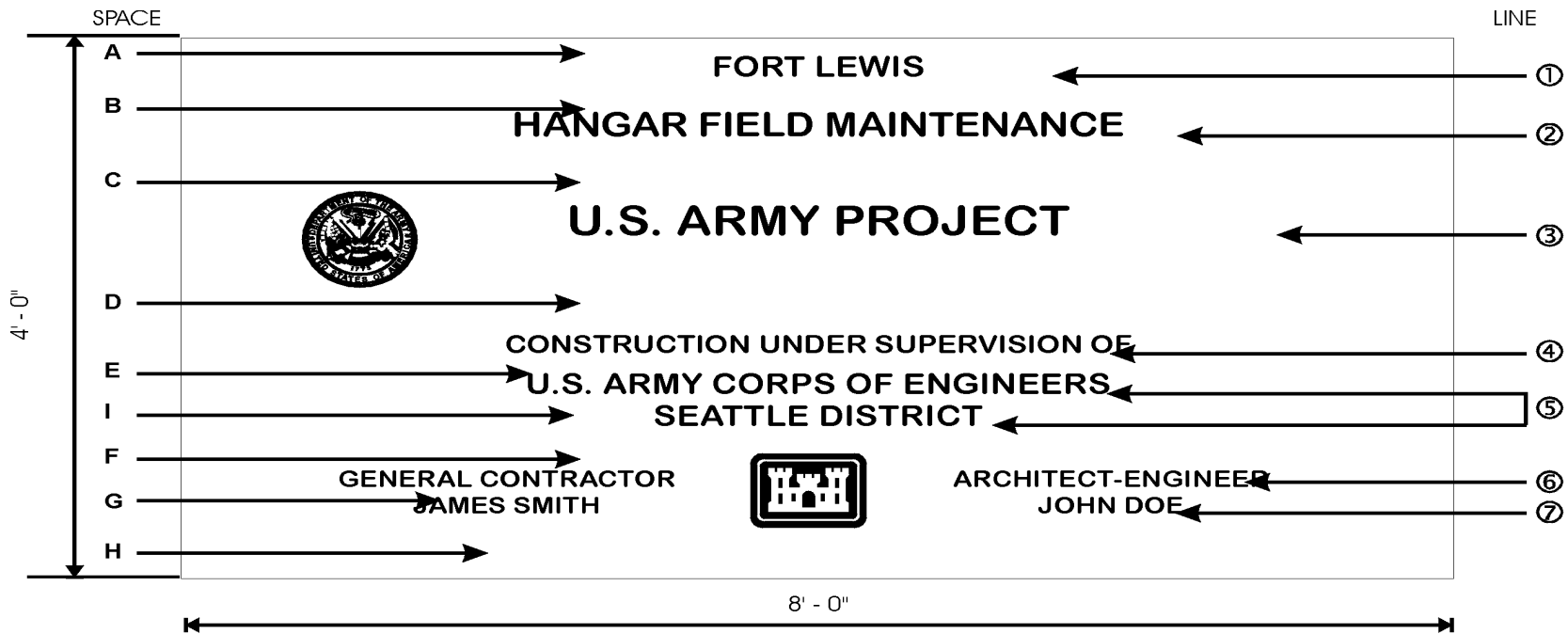
1.17 HARD HAT SIGNS

The Contractor shall provide 610 mm by 610 mm (24 by 24 inch) square Hard Hat Area signs at each entry to the project or work area as directed by the Contracting Officer. A minimum of two signs will be required. Signs shall be in accordance with the sketch at the end of this section.

PART 2 PRODUCTS AND PART 3 EXECUTION (NOT APPLICABLE)



- SIGN SHALL BE FABRICATED FROM .125 THICK 6061-T6 ALUMINUM PANEL
- COLOR
 1. SAFETY RED (SR)
 2. WHITE
 3. WHITE
 4. BLACK
- LETTERING SHALL BE HELVETICA BOLD TYPOGRAPHY.
- LETTERS AND BACKGROUND SHALL BE REFLECTIVE SHEETING MATERIAL.
- SIGNS SHALL BE POSTED AT 6'-6" (BOTTOM SIGN TO GRADE) OR AS DIRECTED BY THE CONTRACTING OFFICER.
- LETTERING TO BE CENTERED ON PANEL.



SAMPLE CONSTRUCTION SIGN FOR MCP PROJECTS SCHEDULE

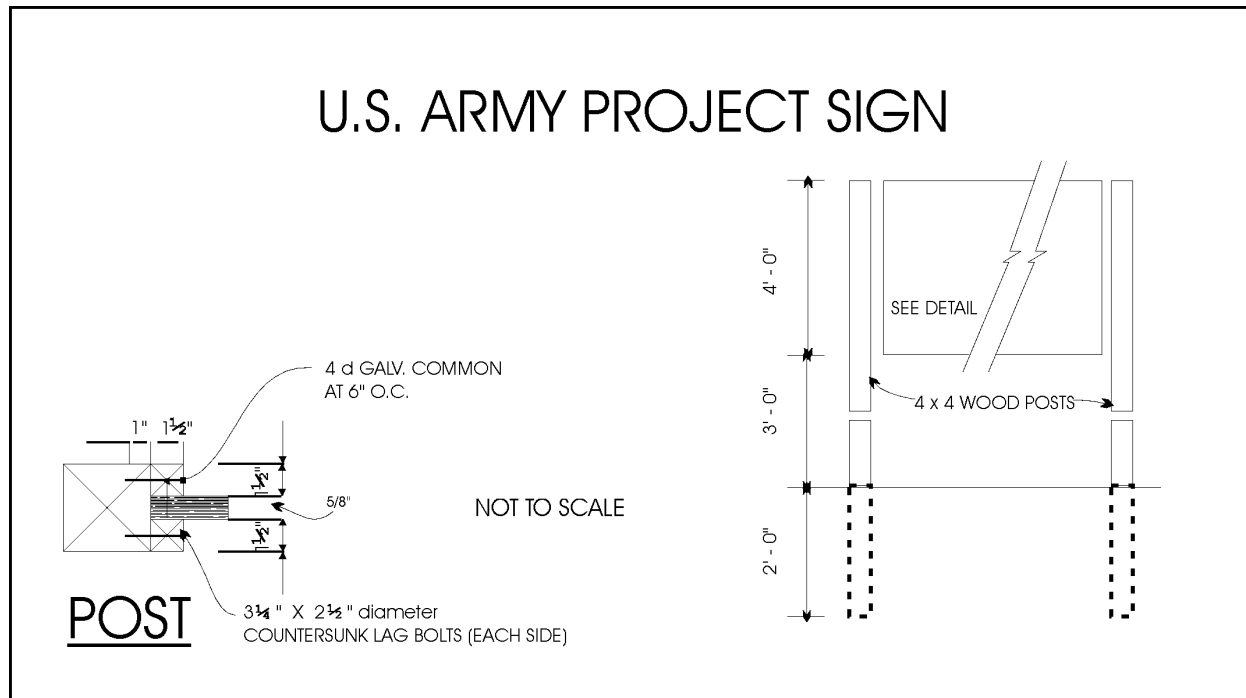
SPACE	HT.	LINE	DESCRIPTION	LETTER HT.	STROKE
A	2"	1	LOCATION	2 3/8"	1/4"
B	2 5/8"	2	PROJECT NOMENCLATURE *	2 3/4"	3/8"
C	5 3/4"	3	U.S. ARMY PROJECT	4"	1/2"
D	8"	4	CONSTRUCTION UNDER SUP.	1 1/2"	1/8"
E	4"	5	CONSTRUCTION AGENCY *	2 3/8"	1/4"
F	4"	6	GENERAL CONTRACTOR *	1 3/8"	3/16"
G	1"	7	GENERAL CONTRACTOR*	1 3/8"	3/16"
H	2 7/8"	*	WILL VARY TO SUIT PROJECT REQUIREMENTS		
I	2		SEATTLE DISTRICT		

U.S. ARMY

**PROJECT
CONSTRUCTION SIGN**

Sheet 1 of 2 Scales As shown
U.S. Army Engr. Dist. Seattle, WA.

Dr:	R.L.W.	Transmitted with report
Tr:	R.L.W.	DATED: 20 JUNE 84
Ck:	R.L.W.	File No. 49s/40-05-15



NOTES:

1. Signboard 4' x 8' x 5/8" grade A-C exterior type plywood with medium density overlay on both sides.
2. Paint both sides and edges with one prime coat and two coats of paint, color white exterior type enamel. Lettering shall be as shown on drawing and shall be black gloss exterior type enamel.
3. Lettering shall be Helvetica medium.
4. Acceptable abbreviations may be used for Contractor's name.
5. Department of Air Force Seal and Corps of Engineers' Castle to be Government furnished.
6. No company logo shall be used.
7. Sign posts and 1 1/2" wood trim shall be painted white.
8. Upon completion of work under this contract, the project sign shall be removed from the job site and shall remain the property of the Contractor.

NOTE: The Contractor shall verify the colors to be used with the Contracting Officer prior to constructing the sign.

SHEET 2 OF 2

END OF SECTION

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SECTION 01572

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 GENERAL

1.1 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy the Contractor shall: (1) practice efficient waste management when ordering, sizing, cutting, and installing products and materials, (2) use all reasonable means to avoid the creation of construction and demolition waste (such as minimizing packaging materials and other intermediate products not used in the finished construction) and (3) divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse.

1.2 MANAGEMENT

The Contractor shall take a pro-active, responsible role in the management of construction and demolition waste and require all subcontractors, vendors, and suppliers to participate in the effort. Construction and demolition waste includes products of demolition or removal, excess or unusable construction materials, packaging materials for construction products, and other materials generated during the construction process but not incorporated into the work. In the management of waste consideration shall be given to the availability of viable markets, the condition of the material, the ability to provide the material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates. The Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling of waste. Revenues or other savings obtained for salvage, or recycling shall accrue to the Contractor. Firms and facilities used for recycling, reuse, and disposal shall be appropriately permitted for the intended use to the extent required by federal, state, and local regulations.

1.3 PLAN

A waste management plan shall be submitted within 15 days after contract award and prior to initiating any site preparation work. The plan shall include the following:

- a. Name of individuals on the Contractor's staff responsible for waste prevention and management.
- b. Actions that will be taken to avoid and reduce solid waste generation.
- c. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.
- d. Characterization, including estimated types and quantities, of the waste to be generated.

- e. Name of landfill(s) and/or incinerator(s) to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.
- f. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks and Habitat for Humanity.
- g. List of specific waste materials that will be salvaged for resale, salvaged and reused, or recycled. Recycling facilities that will be used shall be identified. If a recycling facility (public or private) exists within a 50 mile radius of the project site, it use is required for all materials that facility accepts and that cannot be otherwise reused.
- h. Identification of materials that cannot be recycled/reused with an explanation or justification.
- i. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

1.4 RECORDS

Records shall be maintained to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. The records shall be made available to the Contracting Officer during construction, and a copy of the records shall be delivered to the Contracting Officer upon completion of the construction.

1.5 COLLECTION

The necessary containers, bins and storage areas to facilitate effective waste management shall be provided and shall be clearly and appropriately identified. Recyclable materials shall be handled to prevent contamination of materials from incompatible products and materials and separated by one of the following methods:

1.5.1 Source Separated Method.

Waste products and materials that are recyclable shall be separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing.

1.5.2 Co-Mingled Method.

Waste products and recyclable materials shall be placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed.

1.5.3 Other Methods.

Other methods proposed by the Contractor may be used when approved by the Contracting Officer.

1.5.4 Mandatory Materials for Collection.

The collection and segregation of certain waste materials is mandatory. These materials shall include: soils, organic materials (clean green), concrete, asphalt, masonry, metals, aluminum, glass, paper, cardboard, recyclable plastics, gypsum board, clean dimensional lumber.

1.5.5 Hazardous Materials.

Any hazardous materials utilized or generated during construction shall not be commingled with reuse/recycle materials. Clearly label hazardous material storage and locate remote from reuse/recycle materials.

1.6 DISPOSAL

Except as otherwise specified in other sections of the specifications, disposal shall be in accordance with the following:

1.6.1 Reuse.

First consideration shall be given to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Sale or donation of waste suitable for reuse shall be considered. Salvaged materials, other than those specified in other sections to be salvaged and reinstalled, shall not be used in this project.

1.6.2 Recycle.

Waste materials not suitable for reuse, but having value as being recyclable, shall be made available for recycling whenever economically feasible.

1.6.3 Waste.

Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

1.7 PROJECT WASTE MANAGEMENT REQUIREMENT

The contractor shall salvage or recycle at least ~~50~~75 percent (by weight) of the generated construction, demolition and land clearing waste.

END OF SECTION

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SECTION 01830

FACILITY MAINTENANCE PROGRAM

1 PERFORMANCE REQUIREMENTS:

1.1 Overview. Reference National Defense Authorization Act for Fiscal year 2002, Section 2813 and as modified by Section 2813 in the 2003 Act for "Demonstration Program on Reduction in Long Term Facility Operating, Maintenance and Energy Costs. The Battle Simulation Center project is one of the Army projects under the referenced DoD pilot program to be used to investigate extending the life cycle of government facilities by having the construction contractor responsible for maintaining the facilities for a five-year period immediately following construction. During and at conclusion of the pilot initiatives, the DoD construction agencies are to report back to Congress regarding lessons learned that could be applied in the future.

1.1.1 One of the driving features on this pilot program is the notion that the construction contractor will place greater emphasis during construction on equipment selection, installation, and overall craftsmanship knowing that it will be responsible for maintaining the facilities for 5 years after the Beneficial Occupancy Date (BOD).

1.1.2 During the Operations and Maintenance (O & M) phase of the contract, the Contractor shall maintain the facilities systems of the Battle Simulation Center Ft. Lewis, WA; perform systematic preventive maintenance (PM); provide for continuous maintenance evaluation of critical systems; and perform unscheduled maintenance as necessary to:

- Assure continuous facility operations and prevent disruptions that could adversely affect the mission of the Battle Simulation Center and,
- Prevent premature failure or deterioration of the facility, facility systems, and equipment constructed or installed under the construction phase of the contract.
- Be responsible for the repair or replacement on all aspects of the building **NOT** defined under 1.1.3.2.

1.1.3 In order for the contract to be bid in a fixed-price environment, important aspects must be delineated with regard to what is, and what is not, covered by the Contractor during the 5-year maintenance period. In an attempt to provide a general direction, the following items outlined in 1.1.3.1 and 1.1.3.2 although not totally inclusive, represents suitable information for pricing a fixed price contract over the 5-year pilot period. In addition to information outlined within paragraphs 1.1, the Contractor is expected to draw on their past experience and consider the normal routine maintenance expectations for a building of similar size and function in determining the maintenance cost over the life of the 5-year pilot program in order to adequately define associated risks and costs in preparing an offer for a firm fixed price contract. The O & M manuals provided as a part of the construction phase of the project will form the basis of the preventative maintenance program.

1.1.3.1 Items Included as Contractor's Responsibility: In addition to the Contractor providing preventive maintenance and repairs or replacement of all contractor supplied and installed materials, systems, and equipment, the following are included as additional contractor responsibilities:

<u>Architectural:</u>	Repair or replacement of doors, hardware, windows, floor covering, ceiling tiles, and etc. damaged as a result of normal wear and tear or failure of building systems (i.e. water damage caused by plumbing or roofing leakage) Patching and painting wall surfaces damaged during normal usage. Repair of masonry walls that show signs of failure during normal usage and weather conditions
<u>Plumbing:</u>	Unclogging stopped up drains (interior and exterior) Repair and/or replacement of leaking pipes, valves, drains (interior and exterior)
<u>Mechanical:</u>	Replacement of filters, belts, motors, control system components
<u>Electrical:</u>	Replacement of burned out light bulbs (interior and exterior) Replacement of switches and receptacles
<u>Site Work:</u>	Sidewalks, curbs and gutters and pavements: Patch and repair areas that show signs of failure during normal usage and weather conditions

1.1.3.2 Items Not Included as Contractors Responsibility:

Repair or maintenance of non-contractor supplied materials and equipment (furniture, office equipment, shop equipment, computers, military equipment, etc)
Government security systems
Landscape Maintenance (pruning, fertilizing, and etc.)
Grass cutting
Janitorial services (cleaning, trash removal, maintaining consumable supplies, window washing)

1.1.4 Battle Simulation Center Operations: In order for the Contractor to assemble a fixed price proposal, it is important to delineate how the facility will function and operate. The purpose of the facility is to support all types of Battle Simulation exercises including but not limited to the following:

- a. Administrative Areas (Rooms 101A through 101T and 102A) - These spaces are occupied during normal business hours Monday through Friday, 8 hours a day. On occasion limited numbers of staff will be present at nights and on weekends. The approximate number of permanent staff is 15 to 18 persons.
- b. Classroom spaces (Rooms 122A through 122H) and Multi-Purpose space (Room 104A) - During normal operations these areas are used intermittently to support training exercises and non-simulation training events. They are used several times per week for periods of up to 8 hours. These spaces can also function as full simulation bays, during expanded exercises as described herein. These areas have no permanent staff.

- c. Library (Rooms 111A and 111B) – During normal business hours, this space is used to house both electronic and non-electronic reference materials, for personnel throughout the facility. There is 1 permanent staff in this area.
- d. Conference Room (Room 112A) - During normal operations this area is used intermittently to support training exercises and non-simulation training events. It is used several times per week for periods of up to 8 hours. This area has no permanent staff.
- e. SCIF Area (Rooms 105A through 105E) - These spaces are occupied during normal business hours Monday through Friday, 8 hours a day, by the TACSIM Support Team. In addition to administrative uses during normal duty hours the TACSIM Team conducts exercise support from this location. They normally conduct training exercises 14-21 days per month, with 7-10 days of exercises requiring 24 hour operations. The approximate number of permanent staff is 12 to 15. Access to this space is restricted.
- f. Central Control (Room 119A and 119B) – These control areas are occupied during normal business hours Monday through Friday, 8 hours a day, to support exercise planning and preparation. The approximate number of permanent staff is 14 to 17. The team controls 12-15 exercises per year. Each exercise is 3-4 days in duration and on occasion requires 24 hour operations. Visiting participants for a regular exercise can range between 20 and 100 operating inside the facility, and between 35 and 150 operating on the buildings perimeter. The team also controls 3-4 expanded exercises per year. Each expanded exercise is 3-7 days in duration and on occasion requires 24 hour operations. Visiting participants for an expanded exercise can range between 45 and 150 operating inside the facility, and between 75 and 400 operating on the buildings' perimeter.
- g. Central Control (Room 118A, 118B) and AAR space (Room 108A) – These control and planning areas are occupied during normal business hours Monday through Friday, 8 hours a day, to support exercise planning and preparation. The approximate number of permanent staff is 20 to 23. The control area supports large-scale major exercises. Every 24 months a Corps Warfighter exercise is conducted. This exercise also includes several ramp-up exercises. Almost all exercises are conducted over extended periods (10-12 days) with 24 hour operations. During this time frame, other operations would be limited. Visiting participants for a major Corps Warfighter exercise can range between 750 and 1000 operating inside the facility, and between 750 and 1500 operating on the buildings perimeter.
- h. Central Control (Room 117A and 117B) – These control areas are occupied during normal business hours Monday through Friday, 9 hours a day, to support exercise planning and preparation. The approximate number of permanent staff is 10 to 13. The team controls, on average, 75 exercises per year and is fully operational 250-280 days per year. Each of these exercises is 2-4 days in duration and periodically requires 24 hour operations. It is not uncommon for them to be conducting 2-3 exercises simultaneously. Visiting participants for an average exercise can range between 20 and 150 operating inside the facility, and between 50 and 400 operating on the buildings' perimeter.

- i. Maintenance Supply Area (Rooms 116A – 116D) – During regular exercises, this area will be occupied Monday through Friday, 8 hours a day. During expanded and major exercises limited forces will be active in their spaces nights and on weekends. The approximate number of permanent staff is 5 to 8.
- j. Occupied Communications Rooms (Rooms 120A – 120F and 121A). During some expanded and all major exercises, the 120 series rooms will be manned with approximately 1 visiting staff member per room. During normal operation these areas are not staffed. Room 121A has a permanent staff of 2. All other communication rooms are typically not permanently staffed.
- k. Common areas such as the Break Area (Room 113A) and all toilet facilities – The occupancy and usage for these spaces ranges based on the type of exercise being run at the time.
- l. Simulation Bays (Rooms 123A, 123B, 124A – 124D, 125A – 125D, 126A and 126D), HICON space (Room 107A) and OPFOR space (Room 109A) – These bays are used in varying degree for all regular, expanded and major exercises based on the number of visiting participants in the aforementioned paragraphs. The spaces are frequently reconfigured by means of operable partitions, movable furnishings and screening walls to serve the various types of exercises and groupings.

1.2 Contract Scope. The Contractor shall provide all labor, tools, equipment, staff and management required to perform the duties included in the Statement of Work (SOW) for the maintenance phase of this contract to be accomplished at the Battle Simulation Center facilities located at Ft. Lewis, WA.

1.2.1 The Contractor shall provide a management plan to the Contracting Officer within 90 days of notice to proceed for construction. The plan will provide all elements of the requirements of section 01830. See paragraph 5 for further details.

1.3 Performance Period. The Contractor shall operate the facilities systems of the Battle Simulation Center for a five-year period beginning at the BOD.

1.4 Specific Requirements. The Contractor shall provide the following:

1.4.1 Management Plan paragraph 1.2.1.

1.4.2 Operation and Preventive Maintenance (paragraph 1.5).

1.4.3 Continuous Operational/Functional Evaluation of Critical Systems (paragraph 1.6).

1.4.4 Unscheduled Maintenance (paragraph 1.7).

1.4.5 Alterations and New Construction (paragraph 1.8).

1.4.6 A Contract Facility Manager (CFM) and appropriate supporting maintenance staff. (paragraph 2).

1.4.7 A computer-based Facility Management System (FMS)(paragraph 3).

1.4.8 Systems O & M Manuals (paragraph 4).

1.4.9 Comprehensive Facility Management Plan (CFMP)(paragraph 5).

1.4.10 A plan for and implementation of a transition to another organization for O & M of the facility after the initial 5 year O&M phase (O&M Successor) (paragraph 6).

1.5 Operation and Preventive Maintenance (PM):

1.5.1 Operate the facility systems of the Battle Simulation Center to ensure optimal efficiency.

1.5.2 Manage the operation of the facility maintenance program, including the implementation and maintenance of a computerized Facilities Management System (FMS) (See Section 3).

1.5.3 Provide systematic PM and unscheduled/corrective maintenance as necessary in order to assure continuous facility operation and to prevent disruptions that could adversely affect the mission of the Battle Simulation Center.

1.5.4 Perform necessary actions to preserve warranties (during warranty periods).

1.5.5 Take all reasonable measures to prevent premature failure/deterioration of facilities and facility systems/equipment constructed/installed under the construction portion of this contract.

1.5.6 The Contractor shall provide storage bins and cabinets with the minimum emergency stock of replacement equipment, supplies and spare parts in a place designated by the Government. At the conclusion of the contract period, the Contractor shall provide a complete inventory list along with projected stock to last one full year from the point of contract completion.

1.6 Continuous Operational/Functional Evaluation (OFE) of Critical Systems:

1.6.1 Continuous evaluation provides for maintaining critical systems and critical facility components to assure that a system reaches its expected life expectancy and that efficiency of operations is maintained throughout a system's life. Continuous evaluation not only assures that the equipment is operating at peak efficiency at start-up, but that adjustment, for environmental and operational conditions, would keep the equipment and systems performing at maximum efficiency.

1.6.2 The following have been identified as critical systems for the Battle Simulation Center:

Division 2 - Site

Sections (All) Complete asphalt and concrete pavements, sidewalks, curbs and gutters, and the optional underground sprinkler system (if awarded)

Division 4 - Masonry

Section 04810 - Non-Bearing Masonry Veneer/Steel Stud Walls

Division 7 - Roofing Systems

Section 07412 - Non-Structural Metal Roofing System

Section 07413 - Metal-Siding

Section 07530 - Elastomeric Roofing (EDPM)

Division 8 – Doors and Windows

All doors, hardware, windows, and skylights

Division 9 – Finishes

All floor and wall tile, ceilings tiles, floor tiles and carpets

Division 10 - Specialties

Section 10100 - Visual Communications Specialties

Section 10270 - Raised Floor System

Section 10650 – Operable Partitions

Division 11 - Equipment

Section 11020 – Security Vault Door

Division 12 - Furnishings

Section 12705 - Furniture Systems

Division 13 – Special Construction

Section 13851 – Fire Detection and Alarm System

Section 13930 – Wet Pipe Sprinkler System, Fire Protection

Section 13945 – Pre Action Sprinkler Systems, Fire Protection

Division 14 – (Not Applicable)

Division 15 – Mechanical

Section 15181 – Chilled and Condenser Water Piping and Accessories

Section 15185 – Low Temperature Water Heating System

Section 15515 – Low Pressure Water Heating Boilers

Section 15620 – Liquid Chillers

Section 15700 - Unitary Heating and Cooling Equipment

Section 15895 – Air Supply, Distribution, Ventilation and Exhaust System Custom Air
Handling Equipment

Section 15910 – Direct Digital Control Systems

Section 15950 – Testing/Adjusting/Balancing of HVAC Systems

Division 16 – Electrical

Section 16415 – Electrical Work, Interior

Section 16528 – Exterior Lighting

Section 16710 – Premises Distribution System

1.6.3 Critical Systems are outlined in an effort by the Government to highlight those areas of the facility that are perceived as a high threat to the overall facility short and long term operations and/or overall the life cycle of the facility. As such, the Contractor is encouraged to take extreme care in equipment selection, installation, and craftsmanship related to these items during construction as well as Preventive Maintenance during the 5-year maintenance period.

1.6.4 The Contractor shall implement a Continuous Operational/Functional Evaluation(OFE) that measures and compares the condition and performance of each of the critical systems against the condition and performance at the time of the BOD. The Contractor shall submit for the Contracting Officer's (CO) approval the conditions to be evaluated and the performance criteria to be measured 90 days prior to BOD. Upon acceptance of the facility the conditions and performance data shall be documented and will serve as the baseline criteria for future comparison.

1.6.5 NOT USED.

1.6.6 As a part of the OFE, the Contractor shall take whatever actions are necessary to bring the critical systems back into the conditions and within the operating performance parameters that were identified in the baseline criteria.

1.6.7 The OFE shall not be construed to be a substitute for PM and Unscheduled Maintenance specified elsewhere in the O&M Statement of Work.

1.7 Unscheduled Maintenance and General Services:

1.7.1 General. Unscheduled maintenance is corrective maintenance that involves repair or replacement for any building system or equipment. The Contractor shall perform unscheduled maintenance within the site boundaries of the Battle Simulation Center. All unscheduled maintenance events and general services will be carried out by the Contractor and documented in the FMS.

1.7.2 NOT USED.

1.7.3 Service Orders. SO's will be created in the FMS database to provide direct feedback and data in the FMS for future reference and to establish a baseline for follow-on maintenance at the conclusion of this pilot maintenance contract.

1.7.3.1 The Service Orders are to include the expected time to complete the action, a schedule of cost to include labor categories and labor hours, and materials necessary to complete the work.

1.7.4 Response Requirements. Unscheduled maintenance requirements may be of an emergency, or urgent nature on critical and non-critical systems. Services may be required outside normal duty hours and must be performed immediately to prevent loss of life, injury, loss or damage to property, or serious damage. Emergency services may also be required to eliminate or deal with hazardous conditions such as floods or power outages and sub-freezing building temperatures.

1.7.4.1 The Contractor shall take the necessary actions to protect life, safety, health and property based on the following priorities:

Priority 1 – Emergency response is required to correct conditions that impact life, safety and health of personnel or destruction of Government property. An order received during normal working hours requires a response within 45 minutes and 2 hours other than the Contractor's normal work hours except gas leaks which shall be 45 minutes at all times. Work shall be continuous until safe and secure and completed within two working days.

Priority 2 – Urgent matter is defined as failures or deficiencies which do not immediately endanger the occupants or threaten damage to property, but would soon inconvenience and affect the health and well being of the occupants. Response is required within 24 working hours and will be completed within 2 working days.

Priority 3 – Routine response is required to correct conditions that do not constitute an emergency or urgent need. Response is required within 3 working days and completed within 15 working days or as agreed to by the Government.

1.7.4.2 The Contractor shall respond per the priority timing requirement, when the Government or the Contractor identifies a requirement for unscheduled emergency or urgent or routine maintenance. The Contractor shall respond independently for priority 1 and 2 level responses and document the response in the FMS. Documentation shall include all elements as defined in the following for priority 3 response. For priority 3 level responses, the Contractor shall document the FMS with the problem, the expected time to complete the action, a schedule of cost to include labor categories and labor hours, and materials necessary to complete the work.

1.8 Alterations and New Construction:

1.8.1 The Government reserves the right to alter the buildings without affecting the intent of the work under this contract, to include Contractor and manufacturer warranties. As soon as practicable or no later than 30 calendar days prior to any projected change, the Contractor will be notified and requested to assess any impacts to the existing systems and this portion of the contract.

1.9 Hours of Operation:

1.9.1 Normal Hours. The Contractor shall perform routine repairs and maintenance between the hours of 0730 – 1600, Monday through Friday, except for observed federal holidays.

1.9.2 Priority One and Two Response. (See 1.7.4.1) The Contractor shall respond to Priority One and Two SO's on a 24 hours per day, 7 days per week basis. The CFM or a designated alternate should be on site during normal duty hours, and available to respond to emergencies as needed during non-duty hours. The CFM and any resources that need to be dispatched as required to meet the situation shall answer the call. In accordance with the Staffing Plan, the Contractor shall provide the CO with the names and telephone numbers (home and cell phone) of the individual.

1.10 Performance Requirements Summary. The Contractor's service delivery requirements are summarized into performance objectives that relate directly to standards of performance required to meet mission essential needs. The performance threshold briefly describes the minimum acceptable overall levels of service required for each required service. These thresholds are critical to mission success.

PERFORMANCE REQUIREMENTS SUMMARY

Performance Objective	SOW Para.	Performance Threshold
Operation and Preventive Maintenance. Operate facility systems, manage the operation of facility maintenance program, provide preventive maintenance and unscheduled/corrective maintenance, and maintain storage bins and cabinets with emergency stock of replacement equipment, supplies and spare parts.	1.5	95 % of the time
Continuous operational/functional evaluation of critical systems. Maintain critical systems and components to reach each system's life expectancy.	1.6	95 % of the time
Unscheduled Maintenance and General Services. Perform unscheduled maintenance on all building systems and equipment.	1.7	95 % of the time
Service Orders. Issue service orders for all scheduled and unscheduled maintenance.	1.7.3	95 % of the time
Emergency or Urgent Requirements. Perform emergency and urgent requirements within the time frames in Section 01830.	1.7.4	95 % of the time

2 CONTRACTOR PERSONNEL QUALIFICATIONS, DUTIES, AND TRAINING:

2.1 Contractor Staffing. The Contractor shall provide the management needed to satisfy the specified O&M requirements. These requirements will vary during the contract execution period and the Contractor shall ensure that adequate manpower and expertise is made available to satisfy all the varying requirements of this work description. Contract craft persons, such as painters, carpenters, masons, sheet metal workers, electricians, and HVAC mechanics will be needed periodically for PM, unscheduled maintenance, and the continuous OFE. The Contractor's plan for meeting the manpower requirements of the O&M period will be outlined in the Organizational and Staffing Plan (paragraph 5.4).

2.2 Contract Facility Manager (CFM):

2.2.1 The Contractor shall provide two employees who shall be responsible for the performance of the O&M work. One will be the CFM and the other as the alternate CFM. The name of the person and an alternate who shall act for the Contractor when the CFM is absent shall be designated in writing to the Contracting Officer.

2.2.2 The Contractor shall provide to the Contracting Officer, before commencing work, the names, addresses, business, home and/or cell phone numbers of the CFM and the alternate CFM.

2.2.3 The CFM and/or any alternative designated to act for the CFM, shall have full authority (through the contract execution period) to commit the Contractor to action on matters pertaining to Contractor's administration of this contract.

2.2.4 The Government will provide facilities for the CFM as specified in paragraph 7.

2.3 Qualifications of the CFM: The CFM must have experience in operation and maintenance or closely related field, including the supervision of a subcontracted work-force responsible for maintenance and repair of site and building systems including architectural, electrical, plumbing, mechanical, structural, heating, cooling, power generation and energy monitoring control systems.

2.3.2 The alternate CFM shall have comparable experience.

2.3.3 The CFM and alternate must be able to read, write, speak and understand English, fluently.

2.4 Duties of the CFM:

2.4.1 The CFM shall conduct overall management coordination and shall be the central point of contact with the Contracting Officer for performance of all work under this contract.

2.4.2 Monitor systems performance against desired benchmarks and proactively identify corrective actions as required.

2.4.3 Maintain manuals and publications as part of a reference library and maintain maintenance records and files.

2.4.4 Operate designated terminals of the computerized FMS and input data into that system.

2.4.5 Prepare and submit to the Contracting Officer the reports, and records as specified herein. In addition, an annual report is required of the Contractor to provide a formal assessment pertaining to this pilot O&M program. This report may include strong and weak points of the procedures and processes, lessons learned, cost efficiencies, suggested improvements, etc.

2.4.6 Implement subcontracts, if required, and maintain records of those subcontracts within the FMS data base.

2.4.7 Provide training to successor Contractor and/or Government personnel on the O&M of the facilities and the facilities' systems/equipment.

2.4.8 The Contractor shall submit monthly reports of all activities completed for the preceding month and projected for the upcoming month. The following will be addressed at a minimum:

For the month completed, a summary including but not limited to the following:

- Operational Issues.
- PM completed.
- Continuous OFE of Critical Systems completed.
- Unscheduled Maintenance completed including cost data.
- Any building alterations completed including cost.
- Any changes to the CFM or supporting maintenance staff.
- Deficiency Reports issued and resolution.

For the month ahead, summarize the following:

- PM scheduled.
- Continuous OFE of Critical Systems scheduled.
- Any other issues that require Government action to assure efficient operation of the Battle Simulation Center and maintenance of the facility.

The report shall be presented as an executive summary and provided in three hard copies and one electronic copy three work days prior to the scheduled monthly review.

2.5 Professional Qualifications. The Contractor shall ensure that employees and subcontractors have all applicable current and valid professional certifications (i.e. welding certificates, electrician licenses, etc.) before starting work.

2.6 Contract Maintenance Personnel. All planned contract/subcontractor maintenance personnel will have the same security and screening requirements as personnel employed directly by the Contractor. A plan with the following information shall be submitted to the CO: Full identification information for each individual and resumes of companies and personnel.

2.7 Approvals of Personnel. Employees of the Contractor/subcontractor shall be approved prior to occupancy of the facility by the Contracting Officer.

2.7.1 The Government has the right to restrict the employment under the contract of any Contractor employee or prospective Contractor employee who is identified as a threat to the health, safety, security, general well being or operational mission of the installation and its population. No convicted felons will be allowed to work at the site.

2.7.2 The Contractor shall not employ any person who is an employee of the United States Government if the employment of that person would create a conflict of interest nor shall the Contractor employ any person who is an employee of the Department of the Army, either military or civilian, unless such person seeks and receives approval in accordance with Department of Defense (DoD) Directive 5500.7-R (Standards of Conduct).

2.7.3 The Contractor is cautioned that off-duty active military personnel hired under this contract may be subject to permanent change of station (PCS), change in duty hours or deployment. Military reservists and National Guard members may be subject to recall to active duty. Their absence at any time shall not constitute an excuse for nonperformance under this contract.

2.8 Appearance of Personnel. Contractor personnel shall maintain a neat appearance and be easily recognized. This may be accomplished by wearing distinctive clothing.

2.9 Personnel Identification. The Contractor shall furnish and wear identification badges displayed at all times with a current picture, company name, employee name and description. Badges shall be numbered consecutively and each badge shall be accounted for. A list of issued badge numbers and the corresponding names shall be submitted to the CO at contract start date and shall be updated as changes occur.

3 FACILITIES MANAGEMENT SYSTEM (FMS):

3.1 Software and Hardware requirements:

3.1.1 The Contractor's intended FMS ~~software~~ shall be ~~nonproprietary and be~~ submitted to the CO for Government approval prior to receipt of Notice to Proceed with the O & M portion of the contract. The Contractor shall ~~purchase, install, and~~ operate the FMS and shall enter into the FMS all data required to establish records for the facilities, systems, and equipment. The Contractor will be ~~supplied (by the Government) and~~ responsible for installing, operating and maintaining the data files in electronic format. The electronic format shall be capable of being uploaded into the Fort Lewis Public Works (PW) MAXIMO program, (MAXIMO is a the facility management software / data system, used to track various maintenance components).

3.1.2 All ~~computer hardware, software, historical data and systems~~ under this section shall become the property of the Government at the conclusion of the contract period.

3.1.3 The Contractor shall protect the FMS data from loss and shall routinely back up all data to a storage medium protected against fire.

3.1.4 The Government will provide the Contractor with the data definitions that shall be used for entering the electronic data. The Contractor shall not install any unauthorized copies of the FMS Software.

3.1.5 The Contractor may be required to house the FMS and CFM in the Contractor's construction trailer until the facility is ready for occupancy. Upon BOD, the FMS shall be relocated in the BSC facility (see paragraph 7).

3.1.6 The Contractor will be trained in MAXIMO by the Government and shall be required to track service orders. Completed data records will be provided to the Government quarterly for input into the PW FMS system (MAXIMO).

3.2 Management Systems and Record Keeping:

3.2.1 Management of all PM shall be incorporated into the database, including all PM tasks with appropriate frequencies for each item listed in the Master Equipment List (MEL).

3.2.2 All management plans, schedules, reports and other data deriving from the development of the Management plan shall be developed and recorded in the database.

3.2.3 To enhance Government future forecasting of requirements, all unscheduled maintenance, including proposal and service order management provisions, shall be incorporated into the database.

3.2.4 All basic accounting shall be performed in the system, e.g. budget vs. actual, purchase order tracking, etc.

3.2.5 All cumulative historical records shall be maintained in the system.

3.2.6 All parts, supplies, and inventories used for PM and unscheduled maintenance shall be included in the database so as to allow inventory accounting, forecasting, and procurement efficiency.

3.3 Operating Logs: Maintaining the facility system/equipment operating logs. All critical and non-critical system data shall be maintained.

3.4 Inspection Reports: The Contractor shall maintain records of building inspections which assess unscheduled maintenance to include:

- The dates of such inspections
- Results of inspections
- Corrections required
- Corrections made

If corrections have not been made, the file shall include:

- A schedule for completion of required work
- A note explaining why corrections have not been made
- A backlog of scheduled and unscheduled maintenance requirements.

3.5 Standard Reports: Generation of standard FMS reports shall be provided upon request to the Contracting Officer.

3.6 Records and Data: All records and data maintained in the FMS are the property of the Government and shall be made available to the CO upon request. A complete copy of all records and data shall be provided to the CO (in electronic format) upon completion or termination of this contract.

3.6.1. Contractor personnel who will operate the FMS shall have appropriate computer skills to operate the system. The Contractor shall assure that building occupants have access to the system for data query purposes only. The Contractor shall conduct training of key Government and Contractor personnel to assure proficiency in the FMS.

3.7 Equipment Maintenance and Operation. The Contractor shall provide routine maintenance and shall provide all manufacturer software upgrades as made available by the manufacturer for the duration of the contract and ensure data integrity after upgrade is made. If FMS equipment is damaged by Contractor abuse or misuse, the Contractor shall be responsible for the resulting repair and/or replacement costs. The Contractor shall operate the system in accordance with the manufacturer's instructions and shall make data backups to assure continuing operations. The failure of the computer system shall not be a basis for work stoppages or claims by the Contractor.

4 SYSTEMS OPERATION AND MAINTENANCE MANUALS (SOMM)

4.1 Preparation of SOMM: Using the Management Plan and System Operation and Maintenance Manual (MP & SOMM) Templates as a guide, the Contractor shall prepare the final SOMM to be used during the O & M phase of this contract. See Exhibit SOW-2 for the format of the SOMM.

4.1.2 The SOMM shall be organized by building systems as defined in Exhibit SOW-3, Index of Volumes.

4.1.3 The Contractor shall organize each volume's contents using the O&M SOW for guidance. The Contractor shall revise all volumes, sections, chapters, etc. to provide a comprehensive and up-to-date manual incorporating as-built conditions, as-maintained and current manufacturer's data.

4.1.4 Each volume is designed to 'stand alone' – providing sufficient guidance and supporting material to allow a properly trained, journeyman technician to perform proper services.

4.1.5 Preparation of the SOMM shall be under the direction of an individual or organization that has demonstrated expertise in the preparation of comprehensive and complete O&M instructions for similarly complex systems. The final SOMM shall be submitted for CO review and approval.

4.1.6 The Government-approved SOMM shall be in place no later than 30 days prior to the BOD.

4.1.7 One (1) copy of the Comprehensive Facilities Management Plan shall be in editable Microsoft Word format & the SOMM furnished on electronic media in a searchable .pdf format and four (4) hard copies delivered to the Contracting Officer.

5. COMPREHENSIVE FACILITY MANAGEMENT PLAN (CFMP):

5.1 General. The Contractor shall prepare a CFMP that integrates all the management activities required for the O&M phase of the contract.

5.2. Submittal. The CFMP shall be submitted in conjunction with the SOMM, in accordance with submittal requirements of the Construction contract.

5.3 Minimum Requirements. The following are the minimum components of the comprehensive management plan:

5.3.1 Organization and Staffing Plan

5.3.2 Security Plan

5.3.3 Safety Program Plan

5.3.4 Training Plan

5.3.5 Warranty Plan

5.3.6 Contract Maintenance Plan

5.3.7 Continuous OFE Plan

5.3.8 Preventive Maintenance Plan

5.3.9 Quality Control (QC) Plan

5.4 Organization and Staffing Plan:

5.4.1 The Contractor shall prepare and maintain a written, current organizational plan. The plan shall indicate all categories of personnel employed by the Contractor and subcontractors as listed by system and the reporting relationships established therein.

5.4.2 This plan shall be posted in an accessible location in the Government furnished space provided to the Contractor.

5.4.3 The manpower and staff needed to satisfy the specified O&M requirements will vary during the contract execution period. The Contractor shall employ adequate manpower in order to satisfy all requirements of this work description. Craft persons, such as painters, carpenters, masons, and sheet metal workers, will be needed periodically for unscheduled maintenance.

5.5 Security Plan:

5.5.1 The Contractor shall develop and submit to the CO for review a comprehensive Security Plan based on the Department of Defense Industrial Security Program (reference DOD 5220.22-R).

5.5.2 Security and fire alarm for the Battle Simulation Center is monitored by a centralized security system monitored by Fort Lewis, Washington. The Government Security Manager and Safety Officer will screen and train personnel to familiarize them with the Security Control Operations.

5.5.3 The Contractor shall be responsible for safeguarding all Government property provided for Contractor use. At the close of each work period, Government facilities equipment and materials shall be secured.

5.5.4 NOT USED.

5.5.5 Key Control.

5.5.5.1 The CFM shall maintain key control of keys issued to the Contractor work force.

5.5.5.2 The Contractor shall establish and implement methods of ensuring that all keys issued to the Contractor by the Government are not lost or misplaced and are not used by unauthorized persons. No keys issued the Contractor by the Government shall be duplicated.

5.5.5.3 The Contractor shall immediately report the occurrences of a lost or duplicated key to the CO and the Government Security Manager and Safety Officer.

5.5.5.4 In the event keys, other than master keys, are lost or duplicated, the Contractor shall be required, upon direction of the CO, to re-key or replace the affected lock or locks. The Contractor, at its option, may replace the affected lock or locks or perform re-keying at no cost to the Government. In the event a master key is lost or duplicated, the Government shall replace all locks and keys for that system, and new keys issued to the Contractor. The total replacement cost shall be deducted from the monthly payment due to the Contractor.

5.5.5.5 The Contractor shall prohibit the use of keys issued by the Government by any persons other than the Contractor's employees engaged in the performance of assigned work. The Contractor shall prohibit the opening of locked areas by the Contractor's employees to permit entrance of persons other than the Contractor's employees engaged in the performance of assigned work in those areas.

5.5.5.6 The Contractor shall establish and implement methods of ensuring that all lock combinations are not revealed to unauthorized persons. These procedures shall be included in the Contractor's Security Plan.

5.5.5.7 The Contractor will not be allocated any keys to the facility exterior entrances. The Contractor must coordinate with the building personnel for access to the facility or any secured room or area. Once duties are complete, the Contractor shall ensure the space is secure and notify building owner they have completed the work within the secured area.

5.6 Safety Program Plan:

5.6.1 The Contractor shall develop and submit to the CO for review and approval a comprehensive safety program describing procedures and plans for preventing accidents and for preserving the life and health of Contractor and Government personnel in any way involved with the performance of this contract. The safety program, upon beneficial occupancy, shall comply with regulations as specified by the Occupational Safety and Health Administration (OSHA).

5.6.2 The safety program section of the management plan shall, as a minimum, address responsibilities and procedures that all Contractor personnel must follow. The safety program shall address, as a minimum:

5.6.2.1 Fire safety (hazard prevention, reporting, evacuation layouts, and extinguishers)

5.6.2.2 Maintenance shop safety (protective clothing, protective equipment, storage of oils and lubricants, disposal of waste and contaminated oil, and use of acetylene torches, electric welders, and power equipment)

5.6.2.3 All other devices and procedures necessary to protect the employee and occupants.

5.6.3 The Contractor shall ensure that all employees and occupants know, receive instruction on, and comply with all appropriate safety requirements.

5.6.4 The Contractor shall prepare a plan to ensure that all hazardous material/waste used or generated by any Contractor personnel is properly inventoried, stored, handled, packaged, and disposed of in an appropriate manner. The Contractor's planned procedures for hazardous material and waste disposal shall be submitted to the CO for review and approval 10 days prior to the assumption of the maintenance mission. The Contractor's responsibilities include:

5.6.4.1 Inspecting all shops, maintenance facilities, storage areas, and other facilities under Contractor control where hazardous substances, materials, and/or wastes are either generated or stored, thereby ensuring adequate handling, generation, and storage procedures and identifying any violations of the fire code ,National Fire Protection Association (NFPA), (NFPA 30, Flammable and Combustible Liquid) hazardous material/waste laws and/or regulations.

5.6.4.2 Recording all violations and corrective actions taken; transporting, storing, and handling hazardous substances in a safe and environmentally acceptable manner; and instituting a responsive alert and reporting procedure for use when a spill occurs.

5.6.4.3 Cooperating with Government agencies in order to ensure that the public health and welfare is adequately protected from discharge of oils and hazardous materials/waste.

5.6.4.4 The general guidance for disposal of waste is as follows:

Hazardous waste – Turned in to the installation designated points of reception.

Non-hazardous waste – Properly placed in the dumpster provided.

5.7 Training Plan. The Contractor shall develop a written Training Plan for approval of the CO 60 days prior to acceptance of the facility (BOD). Training Plan shall include lesson plans/lesson outlines, expected duration of each session, who will receive the training, and frequency of instruction if training is of a recurring nature or identified as refresher training. The following types of training shall be provided to all Contractor O&M personnel performing under this contract. The O&M maintenance supervisor or his alternate shall be present for all training sessions with the building operating staff for the equipment being installed by the Contractor.

5.7.1 Orientation. The Contractor shall provide sufficient training for all employees performing duties under this contract. The training shall be provided as soon as practical after employees begin work. As a minimum, however, the initial orientation training shall be completed prior to the date an employee begins work. Orientation training shall include the following topics:

- Appropriate interactions with staff.
- Familiarization with applicable local base regulations and policies (including fire prevention, ground safety, and natural disaster plan).
- Familiarization with technical manuals.
- The duties of each employee.
- The proper collection, handling, storage, transportation, and disposal of Contractor-generated waste.
- Employee personal hygiene and appearance (Proper dress and work attire).
- Adherence to work schedules.
- Documentation or completion of scheduled work assignments.
- Safety orientation briefing

5.8 Warranty Plan:

5.8.1 Warranty plan identifies any existing and/or replacement equipment warranties, specifying the vendor offering the warranty, the length of the warranty and any special O&M requirements that must be met in order to preserve the warranty.

5.8.2 A schedule shall be prepared for each system and summarized in a comprehensive schedule and located in the Comprehensive Management Plan Volume.

5.8.3 All maintenance work during the first year shall be done by or coordinated with the Contractor and the manufacturer holding the warranty. The personnel shall meet the minimum service requirements and/or certifications recommended for that system or piece of equipment.

5.8.4 Any warranties that have effective durations that extend beyond the combination of the construction period and the period of O&M shall be accrued to the Government.

5.9 Sub-Contract Maintenance Plan:

5.9.1 The sub-contract maintenance plan outlines procedures and methodologies for accomplishing the maintenance of various systems and items of equipment by maintenance contracts.

5.9.2 The sub-contract maintenance plan also includes technical specifications/statements of work for those systems and equipment to be maintained by the Contractor, and a detailed cost estimate for the work described in the technical specifications.

5.9.3 If required, just-in-time or on-call contracting methods may be utilized with respect to complex systems and equipment that require special skills or certifications to maintain i.e. (paved areas, fire alarm systems, etc.).

5.10 Anti-Terrorism Force Protection:

5.10.1 The Contractor shall become familiar with and follow all requirements of the Department of Defense Minimum Antiterrorism Standards for Buildings while at the facility.

5.10.2 At no time shall exterior equipment have panels or louvers removed and left without personnel working on the unit so that something could be hidden out of view inside the equipment.

5.10.3 At no time shall trash containers be moved closer to the building than 10Meters.

5.10.4 At no time shall locked exterior doors be held open, while personnel are not present.

5.10.5 Parking of Contractor vehicles shall only be in the designated parking area, Contractor shall not leave any vehicles unattended out of parking area.

5.11 Preventive Maintenance Plan:

5.11.1 The Preventive Maintenance Plan (PMP) identifies the various types/levels of preventive maintenance that will be accomplished by the maintenance staff. The plan must reflect response times/categories for the various items of equipment and identify a generic procedure for the management of service orders.

5.11.2 The PMP shall identify the PM tasks and frequencies for each item listed in the Master Equipment List (MEL). This plan also identifies the skills (trades) required and man-hour estimates for performing the PM tasks.

5.11.3 Facility Systems/Equipment Assessments requirements shall be incorporated within the PMP. These shall include at a minimum:

5.11.4 Life Safety Assessments and Tabulation - This assessment identifies life safety/fire protection code issues and stipulates corrective actions needed to meet NFPA where applicable.

5.11.5 Continuous assessments will be used to compare actual building systems performance against design parameters.

5.11.6 O&M Equipment Operational Assessment - This assessment identifies systems and equipment issues, identifies corrective actions (replacement, upgrade, or renovation), and provides cost estimates.

5.11.7 The Contractor shall prepare, submit and comply with a written yearly master PM schedule. The Contractor shall research equipment manufacturer's and industry recommendations for preventive maintenance requirements and ensure these requirements are included in the Master PM Schedule.

5.12 Quality Control Plan:

5.12.1 The Contractor shall establish and maintain a complete QC Plan to ensure the requirements of the contract are provided as specified. The QC Plan shall outline the process that the Contractor will use to manage the level of performance.

5.12.2 The QC Plan shall include an inspection system covering all the services listed on the O&M SOW. It must specify the areas to be inspected, and the individual(s) who will perform the inspection.

5.12.3 System performance benchmarking shall define methods for identifying and preventing deficiencies in the quality of service before the level of performance becomes unacceptable.

5.12.4 The Contractor shall review systems performance annually by analyzing on-site records of all inspections conducted by the Contractor and necessary corrective action taken. This documentation shall be made available to the CO during the term of the contract and used to benchmark the productivity of the maintenance effort.

6 O&M SUCCESSOR:

6.1 Transition: The last three months of the contract execution period shall be used for an orderly transition of responsibility to the successor that will execute the follow-on O&M program.

6.1.1 An initial meeting between the CO and the CFM for both outgoing and incoming Contractors, shall be held to address phase-out requirements and responsibilities no later than three to six months prior to the end of the current O&M phase. Subsequent meetings will be held as determined by the CO, but not less than weekly thereafter.

6.1.2 When the incumbent Contractor is also the successor Contractor, these required meetings shall not be waived; since orderly transition from one work specification to another will also require significant management involvement in the transition process.

6.1.3 The successor Contractor shall perform all start-up procedures.

6.1.4 The successor for the follow-on O&M program may be Government personnel.

6.2 Successor Observation: During the final three months of this contract, if the incumbent Contractor is not awarded the subsequent contract, the Contractor shall permit his successor and the successor's key personnel to observe and become familiar with any and all operations under this contract.

6.3 Successor Training:

6.3.1 The Contractor shall schedule and provide training for the new personnel that will be assuming the operation and maintenance of the facility. All training will be videotaped by the Contractor giving the training.

6.3.2 The Contractor shall provide on-the-job training (OJT) to each of the O&M successor personnel to ensure sufficient familiarity to take over the O&M responsibilities.

6.3.3 The training objective is to enhance technical skills so that transfer of O&M responsibility for Battle Simulation Center's unique systems/equipment will be efficient.

6.3.4 Verification of training shall be provided to the CO within 3 days after the completion of training. Verification shall include information such as name of craftsman trained, system trained on, type of training, number of hours trained, etc.

6.3.5 Training shall cover features unique to complex electrical and mechanical systems installed at Battle Simulation Center and FMS features such as hardware and software.

7 GOVERNMENT PROVIDED FACILITIES AND SERVICES. The Government shall provide without cost to the Contractor, during the performance of the O&M portion of the contract, the facilities and services listed below:

7.1 Government-Furnished Facilities. Maintenance support space furnished to the Contractor by the Government shall be in the following designated areas:

7.1.1 The Government shall furnish the Contractor with a designated area for office, equipment and storage.

7.1.2 The Government shall provide office furnishings (desk, chair, file storage, etc). All other Contractor supplied furnishings and shop equipment (except specialized equipment necessary for the operation of the facility) will remain the property of the Contractor at the expiration or termination of this contract. All storage bins and cabinets with the minimum emergency stock of replacement equipment, supplies and spare parts inventory, to last one year, shall become the property of the Government at the conclusion of this contract.

7.2 Government-Furnished Services:

7.2.1 The Government will provide to the Contractor all water, sewage, custodial, electrical and data services required for the performance of this contract.

7.2.2 Commercial telephone service acquired by the Contractor for Contractor use shall be paid for by the Contractor.

7.2.3 Failure of the Government to furnish utilities at any time during the performance of the contract because of outages or other interruptions in service shall not be considered by the Contractor as a basis for a claim against the Government.

8. GOVERNMENT QUALITY ASSURANCE (QA):

8.1 Government Surveillance: The Government will evaluate the Contractor's performance under this contract in accordance with the Federal Acquisition Regulation (FAR) Inspection of Services clause.

8.1.2 The Government will record all surveillance observations and inspection results. When an observation or inspection indicates deficient performance, the COR will prepare a Deficiency Report (DR).

8.1.3 The Contractor will accompany the Government and User on walk-through inspections of Battle Simulation Center and document in the data base the results of the walk-through. Upon request, an electronic copy shall be provided to the contracting officer within 10 work days after completion of the walk-through.

8.2 Deficiency Reports:

8.2.1 If the Contractor's performance is found to be unsatisfactory and not in compliance with the requirements specified in this contract, the Government will issue a DR within 3 work days.

8.2.2 Upon presentation of a DR by the Government, the Contractor shall immediately sign the DR, acknowledging its receipt. Within 3 working days of receipt of a DR, the Contractor shall explain in writing to the Government:

- How performance does conform to the requirements of the contract;
- How performance will be returned to conformity;
- How reoccurrence of the problem will be prevented in the future.

8.3 Meetings:

8.3.1 The CFM shall attend monthly reviews with the CO and User.

8.3.2 Additionally, the Contractor shall be required to attend the monthly review meetings until the CO deems that satisfactory performance of the O&M phase of the contract and full and acceptable performance are achieved.

8.3.3 The CO may require additional meetings whenever a DR is issued.

9 CONTRACTOR CLEAN-UP:

9.1 The Contractor shall, at all times, keep the work areas free from accumulation of waste material, rubbish, tools, scaffolding, equipment, and materials. Upon completion of the task, or nightly, the Contractor shall leave the work area and premises in a clean, neat, safe and workmanlike condition. The Contractor is responsible for disposing of both hazardous and non-hazardous job-related waste material in accordance with the local installation procedures.

Exhibit SOW-1—Definitions and Abbreviations

ABBREVIATIONS

BOD.....	Beneficial Occupancy Date
CFM.....	Contract Facility Manager
CFMP	Comprehensive Facilities Management Plan
CO	Contracting Officer
COR	Contracting Officer's Representatives
DoD	Department of Defense
DR	Deficiency Report
FAR	Federal Acquisition Regulation
FMS	Facilities Management System
HVAC	Heating, Ventilation, and Air Conditioning
MEL	Master Equipment List
MP&SOMM	Management Plan & Systems Operation Maintenance Manual
NFPA.....	National Fire Protection Association
O&M	Operation and Maintenance
OFE	Continuous Operational/Functional Evaluation
OJT.....	On-the-Job Training
PCS.....	Permanent Change of Station
PM	Preventive Maintenance
PMP.....	Preventive Maintenance Plan
QA	Quality Assurance
QAR.....	Quality Assurance Representative
QASP	Quality Assurance Surveillance Plan
QC	Quality Control
SO	Service Order
SOMM	System Operation and Maintenance Manual
SOW	Statement of Work

Definitions

Beneficial Occupancy Date (BOD)

Date of final acceptance of facility by the Government.

Breakdown

The stoppage or collapse of equipment or a facility, or a component thereof, that requires corrective action to restore to an operation condition.

Building Exterior

The exterior surface of a building, including all walks, roofs, attached patios, overhangs, and entranceways.

Deficiency Report (DR)

Formal, written documentation of Contractor non-performance or lack of performance for contract work.

Contracting Officer (CO)

A person duly appointed with the authority to enter into and administer contracts on behalf of the Government.

Contracting Officer Representative (COR)

An individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the Contracting Officer to perform specific technical or administrative functions.

Defective Service

Poor performance or nonperformance as specified by Contractor requirements.

End Item

The individual component part listed in the manufacturer's parts listing. End items, component parts and/or individual items are used interchangeably.

Government Property

All property owned or leased to the Government or acquired by the Government under terms of the contract. Government property includes Both Government furnished property and Contractor acquired property as defined in FAR 45.101.

Government Property Administrator

An authorized representative of the Contracting Officer appointed in writing to administer contract requirements and obligations relative to Government property (FAR 45.101.)

Maintenance Backlog

Equipment repair that has not been completed in the specified time

Maintenance

The routine recurring work required to keep the facility and its systems in such a condition that it can be used continuously at its designated capacity and efficiency.

Materials

Materials, parts, and supplies necessary for the maintenance and repair of facilities and equipment.

National Fire Protection Association (NFPA)

An organization that published pamphlets on fire protection and safety, which are accepted by local, State and Federal Governments and considered directive in nature for this statement of work.

O&M Equipment and Facilities

Equipment and construction normally used to maintain general building environment and services (heating, ventilating, and air-conditioning (HVAC); electrical distribution systems; lighting; plumbing; building hardware and furnishings; etc.), except those items intended to perform a specific function not related to maintaining the building environment.

Preventive Maintenance (PM)

The systematic planned care, servicing, and inspection of equipment, utility plants and systems, buildings and structures, and ground facilities for the purpose of detecting and correcting incipient failures, preventing failures, and making minor repairs. Manufacturer's product literature/data sheets are to be used as principal guidance for determining minimal/recommended periodic maintenance missions.

Quality Assurance (QA)

Those actions taken by the Government to assure services meet the requirements of the Statement of Work (SOW) and all other service outputs.

Quality Assurance Review

Periodic examinations to ensure compliance with the Contractor's procedures, plans, schedules, and contract requirements (includes the recording of narrative audit results).

Quality Assurance Representative (QAR)

A Government person responsible for surveillance of Contractor performance

Quality Assurance Surveillance Plan (QASP)

An organized written document used for quality assurance surveillance. The document contains specific methods to perform surveillance of the Contractor.

Quality Control

Those actions taken by a Contractor to control the performance of services so that they meet the requirements of the SOW

Random Sampling

A sampling method in which each service output in a lot has an equal chance of being selected.

Repair

The restoration of a real property asset to its originally constructed or installed condition, or if that restoration is not practical, to a condition that satisfactorily meets the intended purpose. Repair means the application of maintenance services in order to restore serviceability of an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

Sample

A sample consists of one or more service outputs drawn from a lot. The number of outputs in the sample is the sample size.

Sampling Guide

The part of the surveillance plan, which contains all the information, needed to perform surveillance of the service output(s) by the random sampling method of surveillance.

Scheduled Maintenance

Systematic and periodic servicing and inspection of equipment and components to maintain operational efficiency and replace worn or failed parts.

Service Order (SO)

Used to authorize and manage scheduled and unscheduled repair jobs.

Shall

This word is used in conjunction with the contract and specifies that a provision is binding.

Unscheduled Maintenance

Corrective Maintenance that involves repair or replacement for any building system or equipment not included in the Continuous Commissioning Program.

Will

This word is used to express a declaration of purpose on the part of the Government.

Exhibit SOW-2 Organization of SOMM

General Information

1. The following paragraphs provide guidance for the overall intent and structure for completion of a Systems Operation Maintenance Manual.
2. It is the intent that the Contractor will continuously build a SOMM. As a pilot operational program, it is understood that standard industry formats can be substituted, provided the party's intent is to compile all such data in a useable manner.
3. It is the intent that the SOMM should complement the FMS and be jointly used in this operation. Redundancy of requirements shall revert to the FMS system.
4. Where possible a standardized industry format may be substituted.
5. A standardized form format should be followed which makes it easy to review.
6. It is not the intent to duplicate operations and/or data retention. Where possible, all data should be consolidated for ease of use, updates and retrieval.

SOMM sections include:

A. Specific System Description

1. This section identifies examples of building systems and/or major subsystems that comprise the critical functional areas of the building infrastructure.
2. For systems consisting of more than one unit or item of equipment, or where complexity must be explained, an illustration or flow diagram may be included. If one system interfaces with another system or subsystem, this section shall define how they interface.
3. Safety and security topics shall be covered and referenced to the operating procedures, if applicable.
4. A table of capabilities and limitations shall be prepared for the systems, if applicable. The table will include data such as gallons per minute, transfers per hour, , rated ranges, resolution, accuracy, data-handling capability, etc. Additional tables shall be provided as needed to clearly illustrate the capabilities required of a given system or item of equipment that differ because of its configuration within the system. The word "differ", as used above, refers to capabilities other than normal or standard. The fact that the input, output, feedback, or control levels required are within the design specifications of the system or item of equipment is not a sufficient reason for omitting the system or item of equipment from the table.
5. Major equipment components shall be identified and located by describing each component that is significant to O&M, logistics, and safety.

B. Theory of Operation

1. This section addresses how the specific systems and/or major subsystems function to meet the design specifications.
2. The final manual shall contain a brief discussion of the theory of operation and a listing of all the functions of the system and shall show how the various facility subsystem functions are tied together to accomplish the overall system function. The description shall include an overall analysis of the principles of operation of the system equipment and its functions, such as control interlocks, where such principles would not be obvious to a journeyman technician. Particular attention shall be paid to the interface between facility systems and other systems. The descriptions shall be sufficiently detailed to provide O&M personnel with the understanding necessary to adequately perform the system activities and to correctly interpret the results of these activities.
3. An introduction to each specific system has been made by the design team with pertinent data given for the Contractor's use.

C. Operations

1. The final manual shall include equipment and/or system layouts as required for clarity. Information to be provided or identified for reference, includes all piping, wiring, breakers, valves, dampers, controls, etc., complete with functional diagrams, schematics, isometrics, and data to explain the detailed operation and control of each individual piece of equipment and/or system components.
2. Layouts should show the location within the facility of controls, valves, switches, dampers, etc., by reference to site location, wing designation, floor, room number, or other clear and concise directions for locating the item.
3. Operator data may be identical to posted data and framed instructions, and may be included as part of the O&M manuals. The instructions will include:
 - a. Initial adjustments and control settings.
 - b. Precautions and pre-checks to be executed prior to startup of equipment and/or system, including safety devices, monitoring devices, and control sequence.
 - c. Step-by-step sequential procedures for startup and normal operation checks for optimal performance. Safety precautions and instructions that should be incorporated into the operating instructions and flagged for the attention of the operator. Procedures shall include test, normal, and automatic modes.
 - d. Procedures for normal and emergency shutdown of equipment and/or systems. The instructions shall include any procedures necessary for placing the equipment and/or system on standby or preparing the equipment and/or system for startup at a later time. Procedures shall include test, normal, and automatic modes.

- e. Procedures for isolating individual equipment from the system and bringing individual equipment online once the system is operating.
- f. Operational logs and records requirements.

D. Preventative Maintenance

1. Recommended procedures shall indicate preventative maintenance (i.e. lubrications, checks, adjustments, etc.) and good housekeeping practices which should be performed by operating personnel.
2. More complex maintenance procedures that would normally be performed only by trained maintenance personnel; will also be provided.
3. Schedules indicating timeframes or operating hours for initiating operator maintenance and adjustments and including manufacturer's recommended major maintenance requirements will be provided.
4. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the maintenance procedures and flagged for the attention of personnel.
5. The procedures shall include necessary operating instructions for taking equipment offline, online, and putting equipment on standby.
6. The instructions shall address all material, equipment, and system data needed to perform maintenance work and shall include, but not be limited to the following: (as applicable)
 - a. Manufacturers' bulletins, catalogs, and descriptive data.
 - b. Certified performance curves.
 - c. Copies of approved test plans, including logs and records of performance acceptance test results and actual adjustments made during final acceptance and inspections.
 - d. System layouts, including block, wiring, control, and isometric diagrams.
 - e. Schematic items within the facility.
 - f. Interrelationships with other items of the system
7. Emergency adjustments shall be included and flagged for the operator's attention
8. The instructions shall also include procedures for emergency repairs that could be performed by operating personnel.

E. Trouble Analysis (TA)

1. Trouble Analysis procedures for locating and correcting trouble shall be presented in a step-by-step format.
2. Repair procedures may be keyed to a troubleshooting guide outlined as shown in three columns with the following headings:

Trouble/Symptom	Probable Cause(s)	Corrective Action
The indication or symptom of trouble	The instructions, including test hookups, necessary to determine the cause(s)	Procedures for restoring the system to operating condition, or cross reference to where the procedure is written in SOMM

3. Information may also be in logic tree form, or in another clear tabular format with appropriate headings.
4. Trouble analysis shall be documented to the extent necessary to locate the faulty piece of equipment within the system.
5. The procedures shall clearly indicate a major repair activity, which should be performed only in a shop or factory, as opposed to normal repair work, which may be performed onsite or with equipment online.
6. The procedures shall also clearly indicate the limit of repair work that may be performed by Government personnel during the warranty period without voiding the warranty provisions.
7. Safety precautions and instructions that should be followed during these procedures shall be incorporated into the repair documentation and flagged for the attention of personnel.
8. The Trouble Analysis section shall be cross-referenced to the appropriate Exhibits and other documents in the MP&SOMM.

F. Unscheduled Maintenance

1. Cross Referenced to Trouble Analysis and to applicable Exhibits, this section provides documentation on the procedures for isolation, replacement, checkout, and integration of the equipment within the system shall be provided.
2. Test, adjustment, and checkout data, required after replacement will be included.

G. Repair Parts and Special Tools and Equipment

1. Repair Parts
 - a. The Contractor is to identify and provide all required repair parts. Just in time delivery shall be used where possible. Repair parts shall be stored on site, in designated areas, as defined in the O&M SOW.
 - b. A complete list of repair parts and supplies shall be maintained. The list shall include all parts and components of individual pieces of equipment and all parts and components of each system and shall identify such items as nomenclature of part, model number, circuit or component identification, etc. as applicable.

- c. Parts and supplies lists shall be included within each volume of maintenance instructions.
- d. A master list of repair parts and supplies recommended and or required by contract, from each manufacturer for one year of operation, including source of supply, shall be listed with each instruction.
- e. The Contractor shall list the sources of supply for all parts and supplies, including name of supplier/manufacturer, address, and telephone number.
- f. If the parts and suppliers are not normally stocked locally, necessary procurement lead-time shall also be a part of the listing.

H. Vendor Data and Acceptance Tests

1. Vendor Data

- a. A complete set of data, provided by the equipment manufacturer, required for operation, maintenance and checkout will be included and referenced to the appropriate specification's number.
- b. Data may consist of manufacturer's brochures, O&M manuals, catalogs, drawings, service bulletins, and illustrated parts lists necessary to support the O&M of the end item of equipment and assemblies. This reprinted data shall be edited as necessary to make material project specific.

2. Acceptance Tests

- a. A record of all System's Acceptance Tests shall be included in this section.
- b. Any pertinent information relating to problems during testing shall be noted.

I. Special Tools and Equipment List

- 1. The Contractor is to identify and provide all special tools and test equipment.
- 2. A list of all special tools and test, diagnostic measurement, and equipment for system level maintenance in this appendix.
- 3. For the purpose of this specification, the phrase "special tools and test, measurement, and diagnostic equipment" is used to identify all nonstandard tools and equipment designed and developed by the manufacturer and others to perform maintenance, test/calibration, diagnostic/prognostic analysis, and other acceptance testing, and successful O&M.
- 4. Frequency and method of calibration shall be indicated for all special tools, equipment, and test equipment items that require calibration. Necessary standards shall be listed immediately after each item that requires calibration.

J. Warranty Information

1. The Contractor shall incorporate warranty information for each system as identified.
2. In addition to the general warranty required by the contract, the Systems Operation and Maintenance Manual shall include any specific warranties required by other sections of the Technical Specifications and other warranties normally provided with the particular piece of equipment or system.
3. Warranties that are normally provided by manufacturers and which are beyond the warranty for construction shall be specifically noted.
4. A summary of all warranties shall be available either in the FMS or the SOMM, and include, but not be limited to the following information:
 - a. Specification Section
 - b. System identification
 - c. Subsystem or equipment identification
 - d. Term of warranty
 - e. Anticipated warranty inspection date with room for actual date.
 - f. Problems during the warranty period. Latent defects if they present themselves.
 - g. Copy of warranty or warranty data in the absence of an explicit warranty.
5. A master list of all warranties shall be included as defined under the O&M SOW.

K. Master Equipment List

1. The MEL identifies each major system, subsystem, and equipment item in generation breakdown order to the purchase end item level. The completed MEL shall contain as a minimum the following information:
 - a. Item nomenclature
 - b. Functional characteristics
 - c. Item identifier (tag number)
 - d. Specification number
 - e. Design/construction drawing number. (File number when available)
 - f. Manufacturer's name

- g. Manufacturer's part number
- h. Manufacturer's model/serial number
- i. Location Plan
- j. Current Warranty Status

2. The Contractor shall develop a projected and as-built Master Equipment List. Refer to Submittal Requirements of the Management Plan & Systems Operation and Maintenance Manual.

3. The Contractor shall develop and maintain a master O&M manual list identifying all of the equipment for which O&M manuals will be furnished under this contract.

4. Following setup of the O&M manual list, this master listing shall be updated monthly to reflect equipment additions, deletions, changes and alterations.

5. The submittals shall be arranged in alphabetical order according to the type of equipment covered and by manufacturer's equipment noun name; and shall be cross-referenced to the systems involved. Each data submittal shall be dated and shall show the target or actual submittal date for O&M manuals for each item of equipment. For identical pieces of equipment within one system, only one set of O&M data for that equipment item will be required.

6. The Contracting Officer and Contractor will work together to determine whether the above specified information as furnished by the Contractor is adequate and complete and to require such additional submittals by the Contractor as may be necessary to insure that adequate information has been furnished to provide the satisfactory operation and maintenance of the various items of equipment and fulfill the intent of the specifications.

7. Additional submittals or re-submittals supplementing incorrect or incomplete data shall be made within 30 calendar days after receiving notice by the Contracting Officer. All cost arising from these resubmissions shall be borne by the Contractor.

8. All system MELs will be incorporated by system and combined into a comprehensive list to be included in Volume 1, Comprehensive Management Plan of Appendix A - MP&SOMM.

9. Posted Data

- a. The Contractor shall post data for equipment or systems, in addition to O&M manuals and as required by other Technical Specifications sections.
- b. The data shall consist of as-built schematics of all wiring, controls, piping, etc., as necessary for the operation of the equipment or system, and a condensed typewritten description of the system. The data may include approved shop drawings, layout drawings, riser, and block diagrams and

shall indicate all necessary interrelation with other equipment and systems.

- c. The data shall be presented in appropriate sized drawing sheets sealed with clear plastic laminate, collated and bound for clarity and convenience of locations. The framed data presentation and outline shall be acceptable to and provided at locations designated by the Contracting Officer.

10. Instructions may be presented in one or several binders for clarity and convenience of location. The instruction presentation and outline shall be acceptable to the Contracting Officer prior to posting, and shall be provided at locations designated by the Contracting Officer.

L. Training Requirements

1. The Contractor is required to present a training plan for approval. Four (4) copies of the training plans for all required formal training shall be submitted to the Contracting Officer in draft form in one submittal. The Contractor shall provide training, printed instruction material, and training aids, in accordance with the approved plan.

2. The training plan will identify the number of man-hours of instruction required for each system following the guidelines listed in the MP&SOMM templates. The training plan will also specify the proportions of the instruction time to be used for onsite classroom instruction and for onsite instruction which will be performed utilizing the installed equipment or systems.

3. All systems and subsystems requiring training of qualified personnel to properly operate and maintain those systems shall be identified. A task and skills analysis shall be documented to identify special skills required to operate and/or maintain critical, complex or specialized systems. After the skill requirements are approved, the actual training program shall be defined.

4. The Contracting Officer will review the Contractor's proposed training plan, and the Contracting Officer's approval of the plan shall be obtained by the Contractor prior to the start of any training. The Contracting Officer will require 30 days for review and approval of the plan or for disapproval and return to the Contractor for resubmission. The Contractor needs to provide sufficient float time for any necessary resubmissions to preclude possible delays to the scheduled training.

5. The Contractor will provide a draft and final training plan and schedule. The plan shall provide the following information at a minimum:

- a. Trades to be trained and skills required.
- b. Instructional methods
- c. Materials
- d. Special training devices needed to support the program of instruction.

- e. Attendees - planned and actual
- f. A weekly outline of all scheduled training
- g. A day-to-day schedule showing time intervals, the major and subordinate subjects to be covered in each session, with location of training.
- h. Identification and qualifications of proposed instructors.
- i. A list of reference material to be provided by the Contractor to the trainees and a list of training materials such as operation and maintenance instructions, other written and visual aids, mockups, tools, etc.

6. The MP&SOMM will be used as the primary training document for the training instructions.

7. Informal maintenance information shall be provided. General on-the-job training shall be provided by Contractor/subcontractor/Supplier personnel knowledgeable of the materials, finishes, equipment or systems, if determined necessary the Contracting Officer, for general knowledge, equipment orientation, installation observation, etc.

M. Exhibits

1. Illustrations shall be incorporated to identify schematic drawings, riser diagrams, wiring requirements, etc., as required to provide a stand-alone comprehensive O&M manual.

2. The as-built drawings are to be kept on site for reference. All changes or additional information that arise during construction and during the five year O&M period shall be recorded and kept as a part of the manual. All detailed information shall be presented in a clear, concise and comprehensive manner to fully explain the as-built conditions. The Contractor shall provide changes to the as-built drawings to the CO of any work performed by contractor personnel which cause changes including, but not limited to, plant layout, piping or equipment design or detection of an error within 90 days of change.

3. An index of all illustrations and data shall be developed and presented in draft and for final approval in the submittal process.

**Exhibit SOW-3
Index of Volumes**

Volume	Description
1	Comprehensive Management Plan
2	Site Systems
3	Architectural Systems
4	Security Systems
5	Fire Protection Systems
6	Plumbing Systems
7	Mechanical Systems
8	Electrical Systems
9	Specialty Systems

The Design, Construct, Commission Pilot Program consists of a two phased program during which the Contractor of Record provides continuous service. This pilot program streamlines the transition from construction into the operating phase of the building. Continuity will be provided by including the design team, construction Contractor and the owner/user in the critical initial phases of occupancy, through the warranty periods of systems and equipment and into the first five years of occupancy. (Will this actually happen? Will the design team be funded to be involved?) Further enhancement is achieved by insuring continuity of knowledge and professionalism remains consistent during the first five years of operation at the facility. Preventive and Corrective/Unscheduled Maintenance will be provided under this program. Minor repairs will be accomplished as part an organized approach. The building systems will be monitored and benchmarked throughout the life cycles of the system. Emergency responses will be provided using a priority matrix.

Phase 1 of the pilot project spans the routine construction services through the Beneficial Occupancy Date of the Battle Simulation Center. Phase 2 spans the first five years of use, concerning the operation and maintenance of the Battle Simulation Center. The intention of the pilot program is to design, construct, and maintain the facility such that all building systems and equipment perform within the performance guidelines throughout the life cycle of the facility.

This comprehensive approach will create seamless O&M support service from design, construction, move-in and through the first five years of occupancy. The following documents guide the execution of the operation and maintenance mission:

- Construction Documents – Drawings and Specifications
- Operation and Maintenance Statement of Work
- Index of Volumes
- Equipment Manufacturers' Instructions

The Construction Documents, comprised of Drawings and Specifications, serve as means for constructing the facility and bringing the systems and equipment into an integrated whole allowing the facility to function as designed. These documents serve as the basis for establishing performance criteria for each building system.

The Operation and Maintenance Statement of Work defines the requirements of the Contractor during the operation and maintenance phase of the contract.

The Index of Volumes is intended to serve as an outline for the systems to be maintained by the Contractor.

Equipment Manufacturers' Instructions are specification and support documents provided by the manufacturers of the equipment and systems installed in the Battle Simulation Center.

Using the outline provided in Exhibit SOW-3 as a guide, the Contractor shall derive three major deliverables to support the O&M phase of the contract:

- A comprehensive management plan that aggregates and integrates all supporting actions required to deliver an effective preventive maintenance program.
- A comprehensive series of operation and maintenance manuals, updated annually, for each of the building systems that serve as guidance documents for the various journeyman-level tradespersons; and
- The execution of an effective maintenance program that meets the objective of the O&M program.

END OF SECTION

SECTION 02821

FENCING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 121	(1999) Zinc-Coated (Galvanized) Steel Barbed Wire
ASTM A 153/A 153M	(2001) Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 176	(1999) Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip
ASTM A 392	(1996) Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A 478	(1997) Chromium-Nickel Stainless Steel Weaving and Knitting Wire
ASTM A 780	(2000) Repair of Damaged and Uncoated Areas of Hot-Dipped Galvanized Coatings
ASTM A 824	(1995) Metallic-Coated Steel Marcellled Tension Wire for Use With Chain Link Fence
ASTM C 94/C 94M	(2000e2) Ready-Mixed Concrete
ASTM F 1043	(2000) Strength and Protective Coatings on Metal Industrial Chain-Link Fence Framework
ASTM F 1083	(1997) Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F 1184	(1994) Industrial and Commercial Horizontal Slide Gates
ASTM F 626	(1996a) Fence Fittings
ASTM F 900	(1994) Industrial and Commercial Swing Gates

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that

will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Chain Link Fence and All Components; G

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance, and other characteristics of materials or equipment for some portion of the work.

SD-07 Certificates

Chain Link Fence; G

Statement, signed by an official authorized to certify on behalf of the manufacturer, attesting that the chain link fence and component materials meet the specified requirements.

PART 2 PRODUCTS

2.1 FENCE FABRIC

Fence fabric shall conform to the following:

2.1.1 Chain Link Fence Fabric

ASTM A 392, Class 2, zinc-coated steel wire with minimum coating weight of 2.0 ounces (610 grams) of zinc per square foot of coated surface. Fabric shall be fabricated of 9 gauge wire woven in 2 inch (50 mm) mesh. Fabric height shall be height necessary to conform to dimensional information presented on Drawings C-508, C-509, C-510, and C511, including the requirement for burying portions of the fence for Type "C" fence. Fabric shall be twisted and barbed on the top selvage and knuckled on the bottom selvage.

2.2 GATES

ASTM F 900 and/or ASTM F 1184. Gate shall be the type opening dimensions or swing shown. Gate frames shall conform to strength and coating requirements of ASTM F 1083 for Group IA, steel pipe, with external coating Type A, nominal size 1.9-inch (49 mm). Gate frames shall conform to strength and coating requirements of ASTM F 1043, for Group IC, steel pipe with external coating Type A or Type B, nominal size 1.9-inch (49 mm). Gate fabric shall be as specified for chain link fabric. Gate leaves more than 8 feet (2.44 m) wide shall have either intermediate members and diagonal truss rods or shall have tubular members as necessary to provide rigid construction, free from sag or twist. Gate leaves less than 8 feet (2.44 m) wide shall have truss rods or intermediate braces. Gate fabric shall be attached to the gate frame in accordance with line post attachments and top or brace rail attachment details on the Drawings as a minimum requirement and by other method standard with the manufacturer except that welding will not be permitted. Latches, hinges, stops, keepers, rollers, and other hardware items shall be furnished as required for the operation of the gate. Latches shall be arranged for padlocking so that the padlock will be accessible from both sides of the gate. Stops shall be provided for holding the gates in

the open position. Each end member of gate frames shall be extended sufficiently above the top member to carry three strands of barbed wire in horizontal alignment with barbed wire strands on the fence as shown and detailed.

2.3 POSTS

2.3.1 Metal Posts for Chain Link Fence

ASTM F 1083, zinc-coated. Group IA, with external coating Type A steel pipe or Group IC steel pipe, zinc-coated with external coating Type A or Type B. Post shall be either Group IA steel pipe, or Group IC, and shall be zinc coated (Type A). Sizes shall be as shown on the drawings in the respective fence type STEEL POST SCHEDULE. Line posts and terminal (corner, gate, and pull) posts selected shall be of the same designation throughout the fence and the sizes required are also shown in the respective fence type STEEL POST SCHEDULE. Gate post shall be for the gate type specified subject to the limitation specified in ASTM F 900 and/or ASTM F 1184.

2.4 BRACES AND RAILS

ASTM F 1083, zinc-coated, Group IA, steel pipe, size as shown in the respective STEEL POST SCHEDULE. Group IC steel pipe, zinc-coated, shall meet the strength and coating requirements of ASTM F 1043. Braces and rails shall be Group IA or Group IC, steel pipe, size as shown in the respective STEEL POST SCHEDULE or Group II, formed steel sections, as shown in the respective STEEL POST SCHEDULE and shall be zinc coated (Type A).

2.5 WIRE

2.5.1 Tension Wire

Tension wire shall be Type I or Type II, Class 2 coating, in accordance with ASTM A 824.

2.6 ACCESSORIES

ASTM F 626. Ferrous accessories shall be zinc or aluminum coated. Truss rods shall be furnished for each terminal post. Truss rods shall be provided with turnbuckles or other equivalent provisions for adjustment. Barbed wire shall be 2 strand, 12-1/2 gauge wire, zinc-coated, Class 3 in accordance with ASTM A 121. Barbed wire shall be four-point barbed type steel wire. Barbed wire support arms shall be the V arm type and of the design required for the post furnished. Tie wires for attaching fabric to tension wire on high security fences shall be 16 gage (1.6 mm) stainless steel. The tie wires shall be a double loop and 6.5 inches (165 mm) in length. Miscellaneous hardware coatings shall conform to ASTM A 153/A 153M unless modified.

2.7 BARBED TAPE

Reinforced barbed tape, double coil, for fence toppings shall be fabricated from 430 series stainless steel with a hardness range of Rockwell (30N) 37-45 conforming to the requirements of ASTM A 176. The stainless steel strip shall be 0.025 inch thick by 1 inch (0.6 mm thick by 25 mm) wide before fabrication. Each barb shall be a minimum of 1.2 inch (30.5 mm) in length, in groups of 4, spaced on 4 inch (102 mm) centers. The stainless steel core

wire shall have a 0.098 inch (2.5 mm) diameter with a minimum tensile strength of 140 psi (9.68 MPa) and shall be in accordance with ASTM A 478. Each barb shall be a minimum of 1.2 inch (30.5 mm) in length, in groups of 4, spaced on 4 inch (102 mm) centers. Sixteen gauge stainless steel twistable wire ties shall be used for attaching the barbed tape to the barbed wire.

2.8 CONCRETE

ASTM C 94/C 94M, using 3/4 inch (19 mm) maximum size aggregate, and having minimum compressive strength of 3000 psi (21 MPa) at 28 days. Grout shall consist of one part portland cement to three parts clean, well-graded sand and the minimum amount of water to produce a workable mix.

2.9 PADLOCKS

To be provided by Government.

PART 3 EXECUTION

3.1 INSTALLATION

Fence shall be installed to the lines and grades indicated. Fences, including any necessary angled bottom rails, brace rails, truss rods, extra line posts, bases, or other components shall match the ground line and grade as detailed on the Drawings, including through biofiltration ditch, and up or down slopes required by the Site Plan.

The area on either side of the fence line shall be cleared to the extent indicated. Line posts shall be spaced equidistant at intervals not exceeding 10 feet (3 m). Terminal (corner, gate, and pull) posts shall be set at abrupt changes in vertical and horizontal alignment. Fabric shall be continuous between terminal posts; however, runs between terminal posts shall not exceed 500 feet (152.4 m). Any damage to galvanized surfaces, including welding, shall be repaired with paint containing zinc dust in accordance with ASTM A 780.

3.2 EXCAVATION

Post holes shall be cleared of loose material. Waste material shall be spread where directed. The ground surface irregularities along the fence line shall be eliminated to the extent necessary or the fence shall be constructed to maintain the stipulated clearances shown on the detail drawings for each type of fence specified between the bottom of the fabric or rail and finish grade.

3.3 POST INSTALLATION

3.3.1 Posts for Chain Link Fence

Posts shall be set plumb and in alignment. Except where solid rock is encountered, posts shall be set in concrete to the depth indicated on the drawings. Where solid rock is encountered with no overburden, posts shall be set to a minimum depth of 18 inches (457 mm) in rock. Where solid rock is covered with an overburden of soil or loose rock, posts shall be set to the minimum depth indicated on the drawing unless a penetration of 18 inches (457 mm) in solid rock is achieved before reaching the indicated depth, in

which case depth of penetration shall terminate. All portions of posts set in rock shall be grouted. Portions of posts not set in rock shall be set in concrete from the rock to ground level. Posts set in concrete shall be set in holes not less than the diameter shown on the drawings. Diameters of holes in solid rock shall be at least 1 inch (25 mm) greater than the largest cross section of the post. Concrete and grout shall be thoroughly consolidated around each post, shall be free of voids and finished to form a dome. Concrete and grout shall be allowed to cure for 72 hours prior to attachment of any item to the posts. Group II line posts may be mechanically driven, for temporary fence construction only, if rock is not encountered. Driven posts shall be set to a minimum depth of 3 feet (914 mm) and shall be protected with drive caps when being set. For high security fences, fence post rigidity shall be tested by applying a 50 pound (222.4 newtons) force on the post, perpendicular to the fabric, at 5 feet (1.52 m) above ground; post movement measured at the point where the force is applied shall be less than or equal to 3/4 inch (19 mm) from the relaxed position; every tenth post shall be tested for rigidity; when a post fails this test, further tests on the next four posts on either side of the failed post shall be made; all failed posts shall be removed, replaced, and retested at the Contractor's expense.

3.4 RAILS

3.4.1 Bottom Rail

The bottom rail shall be bolted to double rail ends and double rail ends shall be securely fastened to the posts. Bolts shall be peened to prevent easy removal. Bottom rail shall be installed before chain link fabric.

3.5 BRACES AND TRUSS RODS

Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished. Horizontal (compression) braces and diagonal truss (tension) rods shall be installed on fences over 6 feet (1.83 m) in height. A center brace or 2 diagonal truss rods shall be installed on 12 foot (3.66 m) fences. Braces and truss rods shall extend from terminal posts to line posts. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal. No bracing is required on fences 6 feet (1.83 m) high or less if a top rail is installed.

3.6 TENSION WIRES

Tension wires shall be installed along the top and bottom of the fence line and attached to the terminal posts of each stretch of the fence. Top tension wires shall be installed within the top 4 inches (102 mm) of the installed fabric. Bottom tension wire shall be installed within the bottom 6 inches (152 mm) of the installed fabric. Tension wire shall be pulled taut and shall be free of sag.

3.7 CHAIN LINK FABRIC

Chain link fabric shall be installed on the side of the post indicated. Fabric shall be attached to terminal posts with stretcher bars and tension bands. Bands shall be spaced at approximately 15 inch (381 mm) intervals. The fabric shall be installed and pulled taut to provide a smooth and uniform appearance free from sag, without permanently distorting the fabric

diamond or reducing the fabric height. Fabric shall be fastened to line posts at approximately 15 inch (381 mm (15 inch)) intervals and fastened to all rails and tension wires at approximately 24 inch (610 mm) intervals. Fabric shall be cut by untwisting and removing pickets. Splicing shall be accomplished by weaving a single picket into the ends of the rolls to be joined. The bottom of the installed fabric shall be as shown on the detailed Drawings above the ground. For high security Type "C" fence, after the fabric installation is complete, the fabric shall be exercised by applying a 50 pound (222 newtons) push-pull force at the center of the fabric between posts; the use of a 30 pound (133 newtons) pull at the center of the panel shall cause fabric deflection of not more than 2-1/2 inches (63.5 mm) when pulling fabric from the post side of the fence; every second fence panel shall meet this requirement; all failed panels shall be resecured and retested at the Contractor's expense.

3.8 BARBED WIRE SUPPORTING ARMS AND BARBED WIRE

3.8.1 General Requirements

Barbed wire supporting arms and barbed wire shall be installed as indicated and as recommended by the manufacturer. Supporting arms shall be anchored with 3/8 inch (9.5 mm) diameter plain pin rivets or, at the Contractor's option, with studs driven by low-velocity explosive-actuated tools for steel, wrought iron, ductile iron, or malleable iron. Studs driven by an explosive-actuated tool shall not be used with gray iron or other material that can be fractured. A minimum of two studs per support arm shall be used. Barbed wire shall be pulled taut and attached to the arms with clips or other means that will prevent easy removal.

3.9 GATE INSTALLATION

Gates shall be installed at the locations shown. Hinged gates shall be mounted to swing as indicated. Latches, stops, and keepers shall be installed as required. Slide gates shall be installed as recommended by the manufacturer. Padlocks shall be attached to gates or gate posts with chains. Hinge pins, and hardware shall be welded or otherwise secured to prevent removal. For farm style fencing, standard metal gate assemblies with frame and fittings necessary for complete installation or wood gates shall be furnished as shown.

3.10 BARBED TAPE INSTALLATION

Stainless steel reinforced barbed tape shall be installed as detailed on the drawings. Barbed tape shall be stretched out to its manufacturer's recommended length, set on top of the barbed wire and "V" shaped support arms, and then secured to the barbed wire. The barbed tape shall be secured to the barbed wire at the two points and at every spiral turn of both coils as shown on the drawings. Stainless steel reinforced barbed tape for ground applications shall be installed as shown on the drawings.

3.11 GROUNDING

Ground all fences as specified in Section 13100 LIGHTNING PROTECTION SYSTEM.

3.12 ADDITIONAL FENCING MATERIAL AND INSTALLATION

In addition to the fencing indicated on the drawings, provide the following:

Provide all labor, materials, equipment and transportation necessary for the complete construction of additional Type A chain link fencing, installed at Ft. Lewis Washington, in a location to be determined by the Contracting Officer. The fence shall include 1000 linear feet of chain link fencing and associated posts, four (4) 18 foot double swing gates, two (2) corner posts, all as specified, herein. This fencing is to replace the existing RV park fencing. This includes no other site work but the fencing material and installation; it does not include any grading, paving or other associated work.

End of Section

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SECTION 03100
FORMWORK FOR CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 347R (1994; R 1999) Guide to Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31/C 31M (2000) Making and Curing Concrete Test Specimens in the Field

ASTM C 39/C 39M (1999) Compressive Strength of Cylindrical Concrete Specimens

ASTM C 1077 (1998) Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation

FOREST STEWARDSHIP COUNCIL (FSC)

FSC 1.2 (2000) FSC Principles and Criteria of Forest Stewardship

FSC 5.3.5 (2003) Forests Certified by FSC - Accredited Certification Bodies

1.2 DESIGN REQUIREMENTS

The design, engineering, and construction of the formwork shall be the responsibility of the Contractor. The formwork shall be designed in accordance with ACI 347R for anticipated loads including live loads, dead loads, and lateral pressures. Formwork shall comply with the tolerances specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE, paragraph CONSTRUCTION TOLERANCES. The formwork shall be designed as a complete system with consideration given to the effects of cementitious materials and mixture additives such as fly ash, cement type, plasticizers, accelerators, retarders, air entrainment, and others. The adequacy of formwork design and construction shall be monitored prior to and during concrete placement as part of the Contractor's approved Quality Control Plan. Formwork panel deflection shall be limited to 1/360th of each component span unless otherwise noted. Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Formwork

Drawings showing details of formwork, including dimensions of fiber voids, joints, supports, studding and shoring, and sequence of form and shoring removal.

SD-03 Product Data

Materials; G

Manufacturer's literature shall be submitted for plywood, concrete form hard board, form accessories, prefabricated forms, and form coating.

SD-07 Certificates

Wood and Wood Based Products; G

Certificate attesting that wood and wood-based products are from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3)

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Forms and Form Liners

Forms shall be fabricated with facing materials that will produce a finish meeting the specified irregularities in formed surface requirements as defined in ACI 347R. Forms shall be fabricated with facing materials as specified below. Wood forms and panel shall be either rented, reusable forms or made from wood products from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3).

2.1.1.1 Class "C" Finish

This class of finish shall apply to concrete surfaces including stem walls, concrete walls, and permanently exposed concrete surfaces. The form facing may be either tongue-and-groove lumber, plywood, concrete form hard board or steel. Wood form facing for curved or warped surfaces shall be composed of splines of lumber which can be bent to the required shape without splitting or cracking.

2.1.1.2 Class "D" Finish

This class of finish shall apply to concrete foundations and other surfaces permanently concealed not described in Class "C" Finish. The form facing may be of wood or steel.

2.1.2 Form Coating

Form coating shall be commercial formulation that will not bond with, stain, cause deterioration, or any other damage to concrete surfaces. The coating shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds. If special form liners are to be used, the Contractor shall follow the recommendation of the form coating manufacturer.

2.2 ACCESSORIES

Ties and other similar form accessories to be partially or wholly embedded in the concrete shall be of a commercially manufactured type. After the ends or end fasteners have been removed, the embedded portion of metal ties shall terminate not less than 2 inches (50 mm) from any concrete surface either exposed to view or exposed to water. Form ties shall be steel with conical or spherical type spreader inserts designed to maintain positive contact with forming material; units shall be furnished that will leave no metal closer than 1-inch (25 mm) to concrete surface when forms, inserts, and tie ends are removed. Form ties shall be constructed so that the ends or end fasteners can be removed without spalling the concrete. Wire ties shall not be permitted to be used as form ties.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Form Construction

Forms shall be constructed true to the structural design and required alignment. The form surface and joints shall be mortar tight and supported to achieve safe performance during construction, concrete placement, and form removal. The Contractor shall continuously monitor the alignment and stability of the forms during all phases to assure the finished product will meet the required surface class specified in paragraph FORMS AND FORM LINERS and tolerances specified in paragraph DESIGN REQUIREMENTS. Failure of any supporting surface either due to surface texture, deflection or form collapse shall be the responsibility of the Contractor as will the replacement or correction of unsatisfactory surfaces. When forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be re-used if there is any evidence of defects which would impair the quality of the resulting concrete surface. All surfaces of used forms shall be cleaned of mortar and any other foreign material before reuse.

3.1.2 Chamfering

All exposed joints, edges and external corners shall be chamfered by molding placed in the forms unless the drawings specifically state that chamfering is to be omitted or as otherwise specified. Provide 3/4-inch (19 mm)

chamfer at all exposed concrete edges unless specifically noted otherwise. Chamfered joints shall not be permitted where earth or rockfill is placed in contact with concrete surfaces. Chamfered joints shall be terminated 12 inches (300 mm) outside the limit of the earth or rockfill so that the end of the chamfers will be clearly visible.

3.1.3 Coating

Forms for exposed or painted surfaces shall be coated with form oil or a form-release agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's instructions. Forms for unexposed surfaces may be wet with water in lieu of coating immediately before placing concrete, except that, in cold weather when freezing temperatures are anticipated, coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.2 FORM TOLERANCES

3.2.1 Walls

Vertical or horizontal concrete wall surfaces shall be flat planes and plumb to within 1/8 inch (3 mm) in 10 feet (3048 mm). Depressions in wall surface shall be 1/8 inch (3 mm) maximum when 10-foot (3048 mm) straightedge is placed on high points in all directions. Wall thickness shall be 1/4 inch (6 mm) minus or 1/2 inch (13 mm) plus from dimension shown. Maximum form offset between adjacent pieces of formwork shall not exceed 1/8 inch (3 mm).

3.2.2 Footings

a. Variation of Dimensions in Plan:

1. Minus: 1/2 inch (13 mm)
2. Plus: 2 inches (50 mm) when formed or plus 3 inches (75 mm) when placed against unformed excavation

b. Misplacement of Eccentricity:

- 2 percent of the footing width in the direction of misplacement but not more than 2 inches (50 mm)

3.2.3 Steps

Riser: 1/8 inch (3 mm).

a. In a flight of stairs:

1. Tread: 1/4 inch (6 mm)

b. In consecutive steps:

1. Riser: 1/16 inch (2 mm)
2. Tread: 1/8 inch (3 mm)

3.3 FORM REMOVAL

Forms shall not be removed without approval. The minimal time required for concrete to reach a strength adequate for removal of formwork without risking the safety of workers or the quality of the concrete depends on a number of factors including, but not limited to, ambient temperature, concrete lift heights, type and amount of concrete admixture, and type and amount of cementitious material in the concrete. It is the responsibility of the Contractor to consider all applicable factors and leave the forms in place until it is safe to remove them. In any case forms shall not be removed unless the minimum compressive strength requirements below are met, except as otherwise directed or specifically authorized. When conditions are such as to justify the requirement, forms will be required to remain in place for a longer period. All removal shall be accomplished in a manner which will prevent damage to the concrete and ensure the complete safety of the structure. Where forms support more than one element, the forms shall not be removed until the form removal criteria are met by all supported elements. Evidence that concrete has gained sufficient strength to permit removal of forms shall be determined by tests on field cured control cylinders. All control cylinders shall be stored on or as near the structure as possible so they receive the same curing conditions and protection methods as given those portions of the structure they represent. All control cylinders shall be prepared and tested in accordance with ASTM C 31/C 31M and ASTM C 39/C 39M at the expense of the Contractor by an independent laboratory that complies with ASTM C 1077 and shall be tested within 4 hours after removal from the site.

3.3.1 Formwork Not Supporting Weight of Concrete

Formwork for walls, columns, sides of beams, gravity structures, and other vertical type formwork not supporting the weight of concrete shall not be removed in less than 24 hours after concrete placement is completed. Form removal before 24 hours will be allowed for simple floor slab, sidewalks, and driveways provided the ambient temperature during this period has not fallen below 50 degrees F (10 degrees C) at any time since placement and evidence from compressive tests on field-cured concrete control cylinders indicates that the concrete has attained a compressive strength of at least 3,000 psi (20.7 MPa). Control cylinders shall be prepared for each set of forms to be removed before 24 hours. The stability of the concrete shall be evaluated by a structural engineer prior to removal of the forms.

3.3.2 Formwork Supporting Weight of Concrete

Formwork supporting weight of concrete and shoring shall not be removed until structural members have acquired sufficient strength to safely support their own weight and any construction or other superimposed loads to which the supported concrete may be subjected. As a minimum, forms shall be left in place until control concrete test cylinders indicate evidence the concrete has attained at least 75 percent of the compressive strength required for the structure in accordance with the quality and location requirements of Section 03300, paragraph 1.5.2.1.

3.4 INSPECTION

Forms and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor in order to certify to the Contracting Officer that they are ready to receive concrete. The results of each inspection shall be reported in writing to the Contracting Officer.

End of Section

SECTION 06100

ROUGH CARPENTRY

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN FOREST & PAPER ASSOCIATION (AF&PA)

AF&PA T101 (1991; Supple 1993; Addenda Apr 1997; Supple T02) National Design Specification for Wood Construction

AF&PA T11 (1988) Manual for Wood Frame Construction **

AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC)

AITC 111 (1979) Recommended Practice for Protection of Structural Glued Laminated Timber During Transit, Storage and Erection

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 307 (2000) Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

ASTM D 2898 (1994; R 1999) Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing

ASTM F 547 (1977; R 1995) Definitions of Terms Relating to Nails for Use with Wood and Wood-Based Materials

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C2 (2000) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes

AWPA C20 (1999) Structural Lumber Fire-Retardant Pressure Treatment

AWPA C27 (1999) Plywood - Fire-Retardant Pressure Treatment

AWPA M4 (1999) Standard for the Care of Preservative-Treated Wood Products

AWPA P5 (2000) Standards for Waterborne Preservatives

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

APA EWS R540C (1996) Builder Tips Proper Storage and
Handling of Glulam Beams

FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)

FM LPD 1-49 (1995) Loss Prevention Data Sheet - Perimeter
Flashing

FOREST STEWARDSHIP COUNCIL (FSC)

FSC 1.2 (2000) FSC Principles and Criteria of Forest
Stewardship

FSC 5.3.5 (2003) Forests Certified by FSC - Accredited
Certification Bodies

NATIONAL HARDWOOD LUMBER ASSOCIATION (NHLA)

NHLA Rules (1994) Rules for the Measurement & Inspection
of Hardwood & Cypress

NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION (NELMA)

NELMA Grading Rules (1997) Standard Grading Rules for
Northeastern Lumber

REDWOOD INSPECTION SERVICE (RIS)

RIS GCRL (1997) Grades of California Redwood Lumber

SOUTHERN CYPRESS MANUFACTURERS ASSOCIATION (SCMA)

SCMA Spec (1986; Supple No. 1, Aug 1993) Standard
Specifications for Grades of Southern Cypress

SOUTHERN PINE INSPECTION BUREAU (SPIB)

SPIB Rules (1994; Supple 8 thru 11) Standard Grading
Rules for Southern Pine Lumber

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB 17 (1996; Supp. VII & VIII) Standard Grading and
Dressing Rules for Douglas Fir, Western
Hemlock, Western Red Cedar, White Fir, Sitka
Spruce Lumber

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA Grading Rules (1999) Western Lumber Grading Rules 95

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation;
submittals not having a "G" designation are for information only. When

used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Nailers and Nailing Strips

Drawings of field erection details, including materials and methods of fastening nailers in conformance with Factory Mutual wind uplift rated systems specified in other Sections of these specifications.

SD-07 Certificates

Wood and Wood Based Products; G

Certificate attesting that wood and wood-based products are from sustainable forests.

1.3 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition, stored off ground in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity. Laminated timber shall be handled and stored in accordance with AITC 111 or APA EWS R540C.

PART 2 PRODUCTS

2.1 LUMBER AND SHEATHING

2.1.1 Grading and Marking

2.1.1.1 Lumber Products

Solid sawn and finger-jointed lumber shall bear an authorized gradestamp or grademark recognized by ALSC, or an ALSC recognized certification stamp, mark, or hammerbrand. Surfaces that are to be exposed to view shall not bear grademarks, stamps, or any type of identifying mark. Hammer marking will be permitted on timbers when all surfaces will be exposed to view. Wood products shall be from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3). No added urea formaldehyde resins shall be utilized in wood products.

2.1.2 Sizes

Lumber and material sizes shall conform to requirements of the rules or standards under which produced. Unless otherwise specified, lumber shall be surfaced on four sides. Unless otherwise specified, sizes indicated are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

2.1.3 Treatment

Exposed areas of treated wood that are cut or drilled after treatment shall receive a field treatment in accordance with AWP A M4. Items of all-heart material of cedar, cypress, or redwood will not require preservative

treatment, except when in direct contact with soil. Except as specified for all-heart material of the previously mentioned species, the following items shall be treated:

- a. Wood members in contact with or within 18 inches (455 mm) of soil.
- b. Wood members in contact with water.
- c. Wood members exposed to the weather and those used in roofing systems or as nailing strips or nailers over fiberboard or gypsum-board wall sheathing as a base for wood siding.
- d. Wood members set into concrete regardless of location, including flush-with-deck wood nailers for roofs.
- e. Wood members in contact with concrete that is in contact with soil or water or that is exposed to weather.

2.1.3.1 Lumber and Timbers

Lumber and timbers shall be treated in accordance with AWPA C2 with waterborne preservatives listed in AWPA P5 to a retention level as follows:

- a. 0.25 pcf (4 kg per cubic meter) intended for above ground use.
- b. 0.40 pcf (6.4 kg per cubic meter) intended for ground contact and fresh water use.

2.1.4 Moisture Content

At the time lumber and other materials are delivered and when installed in the work their moisture content shall be as follows:

- a. Treated and Untreated Lumber Except Roof Planking: 4 inches (100 mm) or less, nominal thickness, 19 percent maximum. 5 inches (125 mm) or more, nominal thickness, 23 percent maximum in a 3 inch (75 mm) perimeter of the timber cross-section.
- b. Roof Planking: 15 percent maximum.
- c. Materials Other Than Lumber: In accordance with standard under which product is produced.

2.1.5 Fire-Retardant Treatment

Fire-retardant treated wood shall be pressure treated in accordance with AWPA C20 for lumber and AWPA C27 for plywood. Material use shall be defined in AWPA C20 and AWPA C27 for Interior Type A and B and Exterior Type. Treatment and performance inspection shall be by an independent and qualified testing agency that establishes performance ratings. Each piece or bundle of treated material shall bear identification of the testing agency to indicate performance in accordance with such rating. Treated materials to be exposed to rain wetting shall be subjected to an accelerated weathering technique in accordance with ASTM D 2898 prior to being tested for compliance with AWPA C20 or AWPA C27. Items to be treated include: Backing blocking in non-combustible walls.

2.1.1.6 Miscellaneous Wood Members

2.1.1.6.1 Nonstress Graded Members

Members shall include bridging, corner bracing, furring, grounds, and nailing strips. Members shall be in accordance with TABLE I for the species used. Sizes shall be as follows unless otherwise shown:

<u>Member</u>	<u>Size inch (mm)</u>
Bridging	1 x 3 (25 x 75) or 1 x 4 (25 x 100) for use between members 2 x 12 (50 x 300) and smaller; 2 x 4 (50 x 100) for use between members larger than 2 x 12 (50 x 300)
Corner bracing	1 x 4 (25 x 100)
Furring	1 (25) x 2 (50)
Grounds	Plaster thickness by 1-1/2 (38)
Nailing strips	1 x 3 (25 75) or 1 x 4 (25 x 100) when used as shingle base or interior finish, otherwise 2 inch (50 mm) stock

2.1.1.6.2 Wood Bumpers

Bumpers shall be of the species and grade in accordance with TABLE II at the end of this section, size as shown.

2.1.1.6.3 Sill Plates

Sill plates shall be standard or number 2 grade.

2.1.1.6.4 Blocking

Blocking shall be standard or number 2 grade.

2.1.1.6.5 Rough Bucks and Frames

Rough bucks and frames shall be straight standard or number 2 grade.

2.2 ACCESSORIES AND NAILS

Markings shall identify both the strength grade and the manufacturer. Accessories and nails shall conform to the following:

2.2.1 Anchor Bolts

ASTM A 307, size as indicated, complete with nuts and washers.

2.2.2 Bolts: Lag, Toggle, and Miscellaneous Bolts and Screws

Type, size, and finish best suited for intended use. Finish options include zinc compounds, cadmium, and aluminum paint impregnated finishes.

2.2.3 Clip Angles

Steel, 3/16 inch (5 mm) thick, size best suited for intended use; or zinc-coated steel or iron commercial clips designed for connecting wood members.

2.2.4 Expansion Shields

Type and size best suited for intended use.

2.2.5 Nails and Staples

ASTM F 547, size and type best suited for purpose; staples shall be as recommended by the manufacturer of the materials to be joined. For sheathing and subflooring, length of nails shall be sufficient to extend 1 inch (25 mm) into supports. In general, 8-penny or larger nails shall be used for nailing through 1 inch (25 mm) thick lumber and for toe nailing 2 inch (50 mm) thick lumber; 16-penny or larger nails shall be used for nailing through 2 inch (50 mm) thick lumber. Nails used with treated lumber and sheathing shall be galvanized. Nailing shall be in accordance with the recommended nailing schedule contained in AF&PA T11. Where detailed nailing requirements are not specified, nail size and spacing shall be sufficient to develop an adequate strength for the connection. The connection's strength shall be verified against the nail capacity tables in AF&PA T101. Reasonable judgement backed by experience shall ensure that the designed connection will not cause the wood to split. If a load situation exceeds a reasonable limit for nails, a specialized connector shall be used.

PART 3 EXECUTION

3.1 INSTALLATION OF FRAMING

3.1.1 General

General framing shall be in accordance with AF&PA T11. Members shall be closely fitted, accurately set to required lines and levels, and rigidly secured in place. Members shall be framed for passage of ducts. Members shall be cut, notched, or bored in accordance with applicable requirements of AF&PA T101 for the passage of pipes, wires, or conduits. Rafters, purlins, and joists shall be set with crown edge up. Framing shall be kept at least 2 inches (50 mm) away from chimneys and 4 inches (100 mm) away from fireplace backwalls. When joists, beams, and girders are placed on masonry or concrete, a wood base plate shall be positioned and leveled with grout. The joist, beam, or girder shall then be placed on the plate. When joists, beams, and girders are set into masonry or concrete, a pocket shall be formed into the wall. The joist, beam, or girder shall then be placed into the pocket and leveled with a steel shim.

3.2 INSTALLATION OF MISCELLANEOUS WOOD MEMBERS

3.2.1 Bridging

Wood bridging shall have ends accurately bevel-cut to afford firm contact and shall be nailed at each end with two nails. Metal bridging shall be installed as recommended by the manufacturer. The lower ends of bridging shall be driven up tight and secured after subflooring or roof sheathing has been laid and partition framing installed.

3.2.2 Corner Bracing

Corner bracing shall be installed when required by type of sheathing used or when siding, other than panel siding, is applied directly to studs. Corner bracing shall be let into the exterior surfaces of the studs at an angle of approximately 45 degrees, shall extend completely over wall plates, and shall be secured at each bearing with two nails.

3.2.3 Blocking

Blocking shall be provided as necessary for application of siding, sheathing, subflooring, wallboard, and other materials or building items, and to provide firestopping. Blocking shall be provided for support of wall mounted grab bars, equipment, casework, cabinetry and counter tops. Blocking for firestopping shall ensure a maximum dimension of 8 feet (2400 mm) for any concealed space. Blocking shall be cut to fit between framing members and rigidly nailed thereto.

3.2.4 Nailers and Nailing Strips

Nailers and nailing strips shall be provided as necessary for the attachment of finish materials. Nailers used in conjunction with roof deck installation shall be installed flush with the roof deck system. Stacked nailers shall be assembled with spikes or nails spaced not more than 18 inches (450 mm) on center and staggered. Beginning and ending nails shall not be more than 6 inches (150 mm) for nailer end. Ends of stacked nailers shall be offset approximately 12 inches (300 mm) in long runs and alternated at corners. Anchors shall extend through the entire thickness of the nailer. Strips shall be run in lengths as long as practicable, butt jointed, cut into wood framing members when necessary, and rigidly secured in place. Nailers and nailer installation for Factory Mutual wind uplift rated roof systems specified in other Sections of these specifications shall conform to the recommendations contained in FM LPD 1-49.

3.2.5 Wood Grounds

Wood grounds shall be provided as necessary for attachment of trim, finish, and other work to plaster. Grounds shall be run in lengths as long as practicable, butt jointed, and rigidly secured in place.

3.2.6 Furring Strips

Furring strips shall be provided at the locations shown. Furring strips shall be installed at 16 inches (400 mm) on center unless otherwise shown, run in lengths as long as practicable, butt jointed and rigidly secured in place.

3.2.7 Rough Bucks and Frames

Rough bucks shall be set straight, true, and plumb, and secured with anchors near top and bottom of each wood member and at intermediate intervals of not more than 3 feet (900 mm). Anchors for concrete shall be expansion bolts, and anchors for masonry shall be 3/16 x 1-1/4 inch (5 x 32 mm) steel straps extending not less than 8 inches (200 mm) into the masonry and turned down 2 inches (50 mm) into the masonry.

3.3 TABLES

TABLE I. SPECIES AND GRADE

Furring & Blocking						
Grading Rules	Species	Const Standard	No. 2 Comm	No. 2 Board Comm	No. 3 Comm	
NHLA Rules	Cypress			X		
NELMA Grading Rules	Northern White Cedar					X
	Eastern White Pine	X				
	Northern Pine	X				
	Balsam Fir					X
	Eastern Hemlock- Tamarack					X
RIS GCRL	Redwood		X			
SCMA Spec	Cypress			X		
SPIB Rules	Southern Pine		X			
WCLIB 17	Douglas Fir-Larch	X				
	Hem-Fir	X				
	Sitka Spruce	X				
	Mountain Hemlock	X				
	Western Cedar	X				
WWPA Grading Rules	Douglas Fir-Larch	X				
	Hem-Fir	X				
	Idaho White Pine	X				
	Lodgepole Pine				X	
	Ponderosa Pine				X	
	Sugar Pine				X	
	Englemann Spruce				X	
	Douglas Fir South				X	
	Mountain Hemlock				X	
	Subalpine Fir				X	
	Western Cedar				X	

End of Section

SECTION 06200

FINISH CARPENTRY

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 2898	(1994; R 1999) Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
ASTM F 547	(1977; R 1995) Definitions of Terms Relating to Nails for Use with Wood and Wood-Based Materials

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C20	(1999) Structural Lumber Fire-Retardant Pressure Treatment
AWPA C27	(1999) Plywood - Fire-Retardant Pressure Treatment
AWPA C9	(1997) Plywood - Preservative Treatment by Pressure Processes
AWPA P5	(2000) Standards for Waterborne Preservatives

FOREST STEWARDSHIP COUNCIL (FSC)

FSC 1.2	(2000) FSC Principles and Criteria of Forest Stewardship
FSC 5.3.5	(2003) Forests Certified by FSC - Accredited Certification Bodies

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Finish Carpentry; G, RO

Drawings showing fabricated items and special mill and woodwork items. Drawings shall indicate materials and details of construction, methods of fastening, erection, and installation.

SD-04 Samples

Moldings; G, RO

Samples shall be of sufficient size to show patterns, color ranges, and types, as applicable, of the material proposed to be used.

SD-07 Certificates

Wood and Wood Based Products; G

Certificate attesting that wood and wood-based products are from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3)

1.3 DELIVERY AND STORAGE

Materials shall be delivered to the site in undamaged condition, stored off ground in fully covered, well-ventilated areas, and protected from extreme changes in temperature and humidity.

PART 2 PRODUCTS

2.1 WOOD ITEMS VENEER PANELS, SIDING, AND TRIM

The Contractor shall furnish products which optimize design by reducing the amount of wood used (engineered wood), by using recycled wood products and preservatives without arsenic or chromium when the products and methods are competitive in price or directed by the Contracting Officer. The Contractor shall comply with EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS. Wood products shall be from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3). Wood products shall contain no added urea formaldehyde resins.

2.1.1 Grading and Marking

Materials shall bear the grademark, stamp or other identifying marks indicating grades of material and rules or standards under which produced. Such identifying marks on a material shall be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification. The inspection agency for lumber shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used. Except for plywood, wood structural panels, and lumber, bundle marking will be permitted in lieu of marking each individual piece. Surfaces that are to be architecturally exposed to view shall not bear grademarks, stamps, or other types of identifying marks.

2.1.2 Sizes and Patterns

Lumber sizes and patterns shall conform to rules or standards under which produced. Unless otherwise specified, lumber shall be surfaced on four sides. Sizes and patterns for materials other than lumber shall conform to requirements of the rules or standards under which produced. Size

references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product is produced.

2.1.1.3 Moisture Content

The maximum moisture content of untreated trim and wood siding shall be 15 percent at the time of delivery to the jobsite and when installed. Moisture content of all other material shall be in accordance with the standard under which the product is produced.

2.1.1.4 Preservative Treatment

2.1.1.4.1 Plywood

Plywood shall be treated in accordance with AWPA C9 with waterborne preservatives listed in AWPA P5 to a retention level as follows:

- a. 0.25 pcf (4 kg per cubic meter) intended for above ground use.
- b. 0.4 pcf (6.4 kg per cubic meter) intended for ground contact and fresh water use.

2.1.1.5 Fire-Retardant Treatment

Fire-retardant treated lumber shall be pressure treated in accordance with AWPA C20. Fire-retardant treated plywood shall be pressure treated in accordance with AWPA C27. Material use shall be defined in AWPA C20 and AWPA C27 for Interior Type A and Exterior Type. Treatment and performance inspection shall be by a qualified independent testing agency that establishes performance ratings. Each piece or bundle of treated material shall bear identification of the testing agency to indicate performance with such rating. Treated materials to be exposed to rain wetting shall be subjected to an accelerated weathering technique in accordance with ASTM D 2898, Method A, prior to being tested for compliance with AWPA C20 or AWPA C27. Items to be treated include all items in roofing system, in contact with concrete or within 6" of gravel.

2.1.1.6 Moldings

Moldings shall be of the pattern indicated and shall be of a grade compatible with the finish specified.

2.2 NAILS

Nails shall be the size and type best suited for the purpose and shall conform to ASTM F 547. Nails shall be hot-dip galvanized or aluminum when used on exterior work. For siding, length of nails shall be sufficient to extend 1-1/2 inches (40 mm) into supports, including wood sheathing over framing. Screws for use where nailing is impractical shall be size best suited for purpose.

PART 3 EXECUTION

3.1 MOLDING AND INTERIOR TRIM

Molding and interior trim shall be installed straight, plumb, level and with closely fitted joints. Exposed surfaces shall be machine sanded at the mill. Molded work shall be coped at returns and interior angles and mitered at external corners. Intersections of flatwork shall be shouldered to ease any inherent changes in plane. Window and door trim shall be provided in single lengths. Blind nailing shall be used to the extent practicable, and face nailing shall be set and stopped with a nonstaining putty to match the finish applied. Screws shall be used for attachment to metal; setting and stopping of screws shall be of the same quality as required where nails are used.

3.2 TABLES

TABLE I. SPECIES AND GRADE TABLES

Grading Rules	Species
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NELMA Grading Rules

Maple - "character" grade

End of Section

SECTION 06410

LAMINATE AND VENEER CLAD ARCHITECTURAL CASEWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A161.2 (1998) Decorative Laminate Countertops,
Performance Standards for Fabricated High
Pressure

ANSI A208.1 (1999) Particleboard Mat Formed Woods

ANSI A208.2 (1994) Medium Density Fiberboard (MDF)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1037 (1999) Evaluating Properties of Wood-Base
Fiber and Particle Panel Materials

ASTM F 547 (1977; R 1995) Definitions of Terms Relating
to Nails for Use with Wood and Wood-Based
Materials

ARCHITECTURAL WOODWORK INSTITUTE (AWI)

AWI Qual Stds (1999) Architectural Woodwork Quality
Standards

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.9 (1994) Cabinet Hardware

CALIFORNIA AIR RESOURCES BOARD

AQMD 8-51 (2001) Bay Area Air Quality Management
District Regulation 8, Rule 51 Adhesive and
Sealant Products

FOREST STEWARDSHIP COUNCIL

FSC 1.2 (2000) FSC Principles and Criteria of Forest
Stewardship

FSC 5.3.5 (2003) Forests Certified by FSC-Accredited
Certification Bodies

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3 (1995) High-Pressure Decorative Laminates

NEMA LD 3.1 (1995) Performance, Application, Fabrication,
and Installation of High-Pressure Decorative
Laminates

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

AQMD Rule 1168 (2002) Regulation XI, Rule 1168 Adhesive and
Sealant Applications

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

NWWDA I.S. 1-A (1997) Architectural Wood Flush Doors

1.2 GENERAL DESCRIPTION

Work in this section includes laminate and veneer clad custom casework and cabinets as shown on the drawings and as described in this specification. This Section includes high-pressure laminate surfacing and cabinet hardware. The Contractor shall comply with EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS. All exposed and semi-exposed surfaces, whose finish is not otherwise noted on the drawings or finish schedule, shall be sanded smooth and shall receive a clear finish of water based polyurethane. Wood finish may be shop finished or field applied in accordance with Section 09900 PAINTING, GENERAL.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. All items designated with a "G", including product literature, calculations, component data, certificates, diagrams, drawings, and samples shall be submitted concurrently in one complete system submittal. Omission of any required submittal item from the package shall be sufficient cause for disapproval of the entire submittal. Unless otherwise indicated in the submittal review commentary, disapproval of any item within the package shall require a re-submittal of the entire system package, in which all deficiencies shall be corrected. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES.

SD-02 Shop Drawings

Shop Drawings; G, RO
Installation; G, RO

Shop drawings showing all fabricated casework items in plan view, elevations and cross-sections to accurately indicate materials used, details of construction, dimensions, methods of fastening and erection, and installation methods proposed. Shop drawing casework items shall be clearly cross-referenced to casework items located on the project drawings. Shop drawings shall include a color schedule of all casework items to include all countertop, exposed, and semi-exposed cabinet finishes to include finish material manufacturer, pattern, and color.

SD-03 Product Data

Wood Materials; G, RO
Wood Finishes; G, RO
Finish Schedule; G, RO

Descriptive data which provides narrative written verification of all types of construction materials and finishes, methods of construction, etc. not clearly illustrated on the submitted shop drawings. Data shall provide written verification of conformance with AWI Qual Stds for the quality indicated to include materials, tolerances, and types of construction. Both the manufacturer of materials and the fabricator shall submit available literature which describes re-cycled product content, operations and processes in place that support efficient use of natural resources, energy efficiency, emissions of ozone depleting chemicals, management of water and operational waste, indoor environmental quality, and other production techniques supporting sustainable design and products.

SD-04 Samples

Plastic Laminates; G, RO

Two samples of each plastic laminate pattern and color. Samples shall be a minimum of 5 by 7 inches (120 by 170 mm) in size.

Cabinet Hardware; G, RO

One sample of each cabinet hardware item specified to include hinges, pulls, drawer glides and knobs.

SD-07 Certificates

Quality Assurance; G, RO
Laminate Clad Casework; G, RO
Veneer Clad Casework; G, RO

A quality control statement which illustrates compliance with and understanding of AWI Qual Stds requirements, in general, and the specific AWI Qual Stds requirements provided in this specification. The quality control statement shall also certify a minimum of ten years contractor's experience in laminate clad casework fabrication and construction. The quality control statement shall provide a list of a minimum of five successfully completed projects of a similar scope, size, and complexity.

Wood and Wood Based Products; G, RO

Certificate attesting that wood and wood-based products are from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3)

1.4 QUALITY ASSURANCE

Unless otherwise noted on the drawings, all materials, construction methods, and fabrication shall conform to and comply with the premium grade quality

standards as outlined in AWI Qual Stds, Section 400G and Section 400B for laminate clad cabinets. These standards shall apply in lieu of omissions or specific requirements in this specification. Contractors and their personnel engaged in the work shall be able to demonstrate successful experience with work of comparable extent, complexity and quality to that shown and specified. Contractor must demonstrate knowledge and understanding of AWI Qual Stds requirements for the quality grade indicated.

1.5 MOCK-UP

Prior to final approval of shop drawings, a full-size mock-up shall be provided of a typical floor cabinet. The mock-up shall include all components and hardware necessary to illustrate a completed unit and shall include a minimum of one door and one drawer assembly. The completed mock-up shall include countertops and back splashes where specified. The mock-up shall utilize specified finishes in the patterns and colors as indicated in Section 09915 COLOR SCHEDULE. Upon disapproval, the Contractor shall rework or remake the mock-up until approval is secured. Rejected units shall be removed from the jobsite. Approved mock-up may remain as part of the finished work.

1.6 DELIVERY AND STORAGE

Casework may be delivered knockdown or fully assembled. All units shall be delivered to the site in undamaged condition, stored off the ground in fully enclosed areas, and protected from damage. The storage area shall be well ventilated and not subject to extreme changes in temperature or humidity.

1.7 SEQUENCING AND SCHEDULING

Work shall be coordinated with other trades. Units shall not be installed in any room or space until painting, and ceiling installation are complete within the room where the units are located. Floor cabinets shall be installed before finished flooring materials are installed.

1.8 PROJECT/SITE CONDITIONS

Field measurements shall be verified as indicated in the shop drawings before fabrication.

PART 2 PRODUCTS

2.1 WOOD MATERIALS

Wood products shall be from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3). No added urea formaldehyde resins shall be utilized in wood products.

2.1.1 Lumber

All framing lumber shall be kiln-dried Grade III to dimensions as shown on the drawings. Frame front, where indicated on the drawings, shall be nominal 3/4 inch (19 mm) hardwood.

2.1.1.1 Standing and Running Trim

Standing or running trim casework components which are specified to receive a transparent finish shall be maple hardwood species, plain sawn. Grade shall be "character". Location, shape, and dimensions shall be as indicated on the drawings.

2.1.2 Panel Products

2.1.2.1 Plywood

All plywood panels used for framing and finish purposes shall be veneer core hardwood plywood, AWI Qual Stds Grade AA. Nominal thickness of plywood panels shall be as indicated in this specification and on the drawings. Face veneer shall be "character" grade or better and finished in accordance with Section 09915 COLOR SCHEDULE.

2.1.2.2 Particleboard

All particleboard shall be industrial grade, medium density 40 to 50 pounds per cubic foot (640 to 800 kg per cubic meter), 3/4 inch (19 mm) thick. A moisture-resistant particleboard in grade Type 2-M-2 or 2-M-3 shall be used as the substrate for plastic laminate covered components as located on the drawings and other areas subjected to moisture. Particleboard shall meet the minimum standards listed in ASTM D 1037 and ANSI A208.1.

2.1.2.3 Medium Density Fiberboard

Medium density fiberboard (MDF) shall be an acceptable panel substrate where noted on the drawings. Medium density fiberboard shall meet the minimum standards listed in ANSI A208.2 and shall contain formaldehyde-free resins.

2.2 SOLID POLYMER MATERIAL

Solid surfacing casework components shall conform to the requirements of Section 06650 SOLID POLYMER FABRICATIONS.

2.3 HIGH PRESSURE DECORATIVE LAMINATE (HPDL)

All plastic laminates shall meet the requirements of NEMA LD 3 and ANSI A161.2 for high-pressure decorative laminates. Design, colors, surface finish and texture, and locations shall be as indicated on Section 09915 COLOR SCHEDULE. Plastic laminate types and nominal minimum thicknesses for casework components shall be as indicated in the following paragraphs.

2.3.1 Horizontal General Purpose Standard (HGS) Grade, PL-2

Horizontal general purpose standard grade plastic laminate shall be 0.048 inches (plus or minus 0.005 inches) 1.22 mm (plus or minus 0.127 mm) in thickness. This laminate grade is intended for horizontal surfaces where postforming is not required.

2.3.2 Vertical General Purpose Standard (VGS) Grade, PL-3, PL-4, PL-5

Vertical general purpose standard grade plastic laminate shall be 0.028 inches (plus or minus 0.004 inches) 0.71 mm (plus or minus 0.012 mm) in

thickness. This laminate grade is intended for exposed exterior vertical surfaces of casework components where postforming is not required.

2.3.3 Backing Sheet (BK) Grade

Undecorated backing sheet grade laminate is formulated specifically to be used on the backside of plastic laminated panel substrates to enhance dimensional stability of the substrate. Backing sheet thickness shall be 0.020 inches (0.51 mm). Backing sheets shall be provided for all laminated casework components where plastic laminate finish is applied to only one surface of the component substrate.

2.4 THERMO FUSED LOW PRESSURE LAMINATE (MELAMINE)

Thermoset decorative overlays (melamine panels) shall be used for casework cabinet interiors, drawer interior and all semi-exposed surfaces.

2.5 EDGE BANDING

Edge banding for casework doors and drawer fronts shall be high pressure laminate. Material width shall be as indicated on the drawings. Color and pattern shall match exposed door and drawer front laminate pattern and color.

2.6 COUNTERTOP EDGE

Where located on the drawings, edging for countertops shall be high pressure laminate with a flat edge profile. Finished width shall be as indicated on the drawings. Color shall be as indicated on Section 09915 COLOR SCHEDULE.

2.7 CABINET HARDWARE

All hardware shall conform to BHMA A156.9, unless otherwise noted, and shall consist of the following components:

- a. Door Hinges: concealed type, BHMA No. B01503.
- b. Cabinet Pulls: Finger pull type, of cylindrical shape with indentation at bottom for operation with one finger. Aluminum or stainless steel in brushed finish. Back mounted, grade 3.
- c. Drawer Slide: Side mounted type, BHMA No. B05053 with full extension and a minimum 100 pound (45kg) load capacity. Slides shall include an integral stop to avoid accidental drawer removal.
- d. Adjustable Shelf Support System: Recessed (mortised) metal standards, BHMA No. B04071. Support clips for the standards shall be closed type, BHMA No. B04081
- e. Sliding Rail System: Sliding rail system for audio/video equipment constructed of 11 gauge steel rails and 13 gauge steel pan, 300 lbs (136 kgs) capacity, and equal to Middle Atlantic Products model #SRS4-20. Coordinate with Audio/Video equipment.

2.8 FASTENERS

Nails, screws, and other suitable fasteners shall be the size and type best suited for the purpose and shall conform to ASTM F 547 where applicable.

2.9 ADHESIVES, CAULKS, AND SEALANTS

2.9.1 Adhesives

Adhesives shall be of a formula and type recommended by AWI. Adhesives shall be selected for their ability to provide a durable, permanent bond and shall take into consideration such factors as materials to be bonded, expansion and contraction, bond strength, fire rating, and moisture resistance. All adhesives must meet or exceed the VOC limits of South Coast Air Quality Management District AWMD Rule 1168.

2.9.1.1 Wood Joinery

Adhesives used to bond wood members shall be a Type II for interior use polyvinyl acetate resin emulsion. Adhesives shall withstand a bond test as described in NWWDA I.S. 1-A.

2.9.1.2 Laminate Adhesive

Adhesive used to join high-pressure decorative laminate to wood shall be a water-based contact adhesive. PVC edgebanding shall be adhered using a polymer-based hot melt glue.

2.9.2 Caulk

Caulk used to fill voids and joints between laminated components and between laminated components and adjacent surfaces shall be clear, 100 percent silicone.

2.9.3 Sealant

Sealant shall be of a type and composition recommended by the substrate manufacturer to provide a moisture barrier at sink cutouts and all other locations where unfinished substrate edges may be subjected to moisture. All sealants used as a filler must meet or exceed California Air Resources Board AQMD 8-51.

2.10 WOOD FINISHES

Paint, stain, varnish and their applications required for veneer clad casework components shall be as indicated in Section 09915 COLOR SCHEDULE. Color and location shall be as indicated on the drawings.

2.11 ACCESSORIES

2.11.1 Grommets

Grommets shall be plastic material for cutouts with a diameter of 2 inches (50 mm). Locations shall be as indicated on the drawings.

2.12 FABRICATION

Fabrication and assembly of components shall be accomplished at the shop site to the maximum extent possible. Construction and fabrication of cabinets and their components shall meet or exceed the requirements for AWI premium grade unless otherwise indicated in this specification. Cabinet style, in accordance with AWI Qual Stds, Section 400-G descriptions, shall be reveal overlay.

2.12.1 Base and Wall Cabinet Case Body

Frame members shall be glued-together, kiln-dried hardwood lumber. Top corners, bottom corners, and cabinet bottoms shall be braced with either hardwood blocks or water-resistant glue and nailed in place metal or plastic corner braces. Cabinet components shall be constructed from the following materials and thicknesses:

- a. Body Members (Ends, Divisions, Bottoms, and Tops): 3/4 inch (19 mm) veneer core plywood panel product.
- b. Face Frames and Rails: 3/4 inch (19 mm) panel product.
- c. Shelving: 3/4 inch (19 mm) veneer core plywood panel product.
- d. Cabinet Backs: 1/4 inch (6 mm) veneer core plywood panel product.
- e. Drawer Sides, Backs, and Subfronts: 1/2 inch (13 mm) hardwood lumber or panel product.
- f. Drawer Bottoms: 1/4 inch (6 mm) veneer core plywood panel product.
- g. Door and Drawer Fronts: 3/4-inch (19 mm) veneer core plywood panel product.

2.12.1.1 Joinery Method for Case Body Members

- a. Tops, Exposed Ends, and Bottoms.
 - 1) Steel "European" assembly screws 1-1/2 inch (37 mm) from end, 5 inch (128 mm) on center, fasteners will not be visible on exposed parts).
 - 2) Doweled, glued under pressure (approx. 4 dowels per 12 inches (300 mm) of joint).
 - 3) Stop dado, glued under pressure, and either nailed, stapled or screwed (fasteners will not be visible on exposed parts).
- b. Exposed End Corner and Face Frame Attachment.
 - 1) For mitered joint: lock miter or spline or biscuit, glued under pressure (no visible fasteners).
 - 2) For non-mitered joint (90 degree): butt joint glued under pressure (no visible fasteners).
- c. Cabinet Backs (Wall Hung Cabinets): Wall hung cabinet backs must not be relied upon to support the full weight of the cabinet and its anticipated load for hanging/mounting purposes. Method of back joinery

and hanging/mounting mechanisms should transfer the load to case body members. Fabrication method shall be:

1) Full bound, captured in grooves on cabinet sides, top, and bottom. Cabinet backs for floor standing cabinets shall be side bound, captured in grooves; glued and fastened to top and bottom.

2) Full overlay, plant-on backs with minimum back thickness of 1/2 inch (13 mm) and minimum No. 12 plated (no case hardened) screws spaced a minimum 3 inches (80 mm) on center. Edge of back shall not be exposed on finished sides. Anchor strips are not required when so attached.

d. Cabinet Backs (Floor Standing Cabinets).

1) Side bound, captured in grooves; glued and fastened to top and bottom.

2) Full overlay, plant-on backs with minimum back thickness of 1/2 inch (13 mm) and minimum No. 12 plated (no case hardened) screws spaced a minimum 3 inches (80 mm) on center. Edge of back shall not be exposed on finished sides. Anchor strips are not required when so attached.

e. Wall Anchor Strips shall be required for all cabinets with backs less than 1/2 inch (13 mm) thick. Strips shall consist of minimum 1/2 inch (13 mm) thick lumber, minimum 2-1/2 inches (60 mm) width; securely attached to wall side of cabinet back - top and bottom for wall hung cabinets, top only for floor standing cabinets.

2.12.2 Cabinet Floor Base

Floor cabinets shall be mounted on a base constructed of 3/4 inch (19 mm) veneer core exterior plywood. Base assembly components shall be a moisture-resistant panel product. Finished height for each cabinet base shall be as indicated on the drawings. Bottom edge of the cabinet door or drawer face shall be as indicated on the drawings.

2.12.3 Cabinet Door and Drawer Fronts

Door and drawer fronts shall be fabricated from 3/4 inch (19 mm) veneer core hard plywood. Door and drawer front edges shall be surfaced with high pressure plastic laminate or wood veneer as indicated in Section 09915 COLOR SCHEDULE.

2.12.4 Drawer Assembly

Drawer components shall consist of a removable drawer front, sides, backs, and bottom. Drawer components shall be constructed of the following materials and thicknesses:

a. Drawer Sides and Back For Thermofused Melamine Finish: 1/2 inch (13 mm) thick veneer core hard plywood.

b. Drawer Bottom: 1/4 inch (6 mm) thick veneer core hard plywood thermo fused melamine finish.

2.12.4.1 Drawer Assembly Joinery Method

- a. Multiple dovetail (all corners) or French dovetail front/dadoed back, glued under pressure.
- b. Doweled, glued under pressure.
- c. Lock shoulder, glued and pin nailed.
- d. Bottoms shall be set into sides, front, and back, 1/4 inch (6 mm) deep groove with a minimum 3/8 inch (9 mm) standing shoulder.

2.12.5 Shelving

Shelving shall be fabricated from 3/4 inch (19 mm) veneer core plywood. All shelving top and bottom surfaces shall be finished with HPDL plastic laminate. Shelf edges shall be finished in a HPDL plastic laminate.

2.12.5.1 Shelf Support System

The shelf support system shall be: Recessed (mortised) metal shelf standards. Standards shall be mortised flush with the finishes surface of the cabinet interior side walls, two per side. Standards shall be positioned and spaced on the side walls to provide a stable shelf surface that eliminates tipping when shelf front is weighted. Standards shall be installed and adjusted vertically to provide a level, stable shelf surface when clips are in place.

2.12.6 Laminate Clad Countertops

Laminate countertop substrate shall be constructed of 3/4 inch (19 mm) veneer core plywood. The substrate shall be moisture-resistant where countertops receive sinks, lavatories, or are subjected to liquids. All substrates shall have sink cutout edges sealed with appropriate sealant against moisture. No joints shall occur at any cutouts. A balanced backer sheet is required.

2.12.6.1 Edge Style

Front countertop edges shall be in shapes and to dimensions as shown on the drawings. The countertop edge material shall be: Plastic laminate Self Edge. Flat, 90 degree "self " edge. Edge must be applied before top. Laminate edge shall overlap countertop laminate and shall be eased to eliminate sharp corners.

2.12.6.2 Laminate Clad Splashes

Countertop splash substrate shall be 3/4 inch (19 mm) veneer core plywood. Laminate clad backsplash shall be loose, to be installed at the time of countertop installation. Side splashes shall be straight profile and provided loose, to be installed at the time of countertop installation. Back and side splash laminate pattern and color shall match the adjacent countertop laminate.

2.12.7 Laminate Application

Laminate application to substrates shall follow the recommended procedures and instructions of the laminate manufacturer and NEMA LD 3.1, using tools and devices specifically designed for laminate fabrication and application. Provide a balanced backer sheet (Grade BK) wherever only one surface of the component substrate requires a plastic laminate finish. Apply required grade of laminate in full uninterrupted sheets consistent with manufactured sizes using one piece for full length only, using adhesives specified herein or as recommended by the manufacturer. Fit corners and joints hairline. All laminate edges shall be machined flush, filed, sanded, or buffed to remove machine marks and eased (sharp corners removed). Clean up at easing shall be such that no overlap of the member eased is visible. Fabrication shall conform to NEMA LD 3.1 and ANSI A161.2. Laminate types and grades for component surfaces shall be as follows unless otherwise indicated on the drawings:

a. Base/Wall Cabinet Case Body.

- 1) Exterior (exposed) surfaces to include exposed and semi-exposed face frame surfaces: HPDL Grade VGS.
- 2) Interior (semi-exposed) surfaces to include interior back wall, bottom, and side walls: Thermofused melamine.

b. Adjustable Shelving.

- 1) Top and bottom surfaces: HPDL Grade HGS.
- 2) All edges: HPDL Grade VGS.

c. Fixed Shelving.

- 1) Top and bottom surfaces: HPDL Grade HGS.
- 2) Exposed edges: HPDL Grade VGS.

d. Door, Drawer Fronts, Access Panels of High Pressure Decorative Laminate.

- 1) Exterior (exposed) faces: HPDL Grade VGS
- 2) Edges: HPDL Grade VGS.
- 3) Interior (semi-exposed) faces: Thermofused Melamine.

e. Door, Drawer Fronts, Access Panels of Wood Veneer

- 1) Exterior (exposed) and interior (semi-exposed) faces: WD-2
- 2) Edges: Veneer edge banding to match.

f. Drawer Assembly. All interior and exterior surfaces: Thermofused Melamine.

g. Countertops and Splashes. All exposed and semi-exposed surfaces: HPDL Grade HGS

2.12.7.1 Tolerances

Flushness, flatness, and joint tolerances of laminated surfaces shall meet the AWI Qual Stds premium grade requirements.

2.12.8 Finishing

2.12.8.1 Filling

No fasteners shall be exposed on laminated surfaces. All nails, screws, and other fasteners in non-laminated cabinet components shall be countersunk and the holes filled with wood filler consistent in color with the wood species.

2.12.8.2 Sanding

All surfaces requiring coatings shall be prepared by sanding with a grit and in a manner that scratches will not show in the final system.

2.12.8.3 Coatings

Types, method of application and location of casework finishes shall be in accordance with the finish schedule, drawings and Section 09900 PAINTING, GENERAL. All cabinet reveals shall be painted.

PART 3 EXECUTION

3.1 INSTALLATION

Installation shall comply with applicable requirements for AWI Qual Stds premium quality standards. Countertops and fabricated assemblies shall be installed level, plumb, and true to line, in locations shown on the drawings. Cabinets and other laminate clad casework assemblies shall be attached and anchored securely to the floor and walls with mechanical fasteners that are appropriate for the wall and floor construction.

3.1.1 Anchoring Systems

3.1.1.1 Floor

Base cabinets shall utilize a floor anchoring system. Anchoring and mechanical fasteners shall not be visible from the finished side of the casework assembly. Cabinet assemblies shall be attached to anchored bases without visible fasteners. Where assembly abutts a wall surface, anchoring shall include a minimum 1/2 inch (13 mm) thick lumber or panel product hanging strip, minimum 2-1/2 inch (60 mm) width; securely attached to the top of the wall side of the cabinet back.

3.1.1.2 Wall

Cabinet to be wall mounted shall utilize minimum 1/2 inch (13 mm) thick lumber or panel product hanging strips, minimum 2-1/2 inch (60 mm) width; securely attached to the wall side of the cabinet back, both top and bottom.

3.1.2 Countertops

Countertops shall be installed in locations as indicated on the drawings. Countertops shall be fastened to supporting casework structure with mechanical fasteners, hidden from view. All joints formed by the countertop or countertop splash and adjacent wall surfaces shall be filled with a clear silicone caulk.

3.1.2.1 Loose Splashes

Loose back and side splashes shall be adhered to both the countertop surface perimeter and the adjacent wall surface with adhesives appropriate for the type of materials to be adhered. Joints between the countertop surface and splash shall be filled with clear silicone caulk in a smooth consistent concave bead. Bead size shall be the minimum necessary to fill the joint and any surrounding voids or cracks.

3.1.3 Hardware

Casework hardware shall be installed in types and locations as indicated on the drawings. Where fully concealed European-style hinges are specified to be used with particleboard or fiberboard doors, the use of plastic or synthetic insertion dowels shall be used to receive 3/16 inch (5 mm) "Euroscrews". The use of wood screws without insertion dowels is prohibited.

3.1.4 Doors, Drawers and Removable Panels

The fitting of doors, drawers and removable panels shall be accomplished within target fitting tolerances for gaps and flushness in accordance with AWI Qual Stds premium grade requirements.

3.1.5 Plumbing Fixtures

Sinks, sink hardware, and other plumbing fixtures shall be installed in locations as indicated on the drawings and in accordance with Section 15400 PLUMBING, GENERAL PURPOSE.

End of Section

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SECTION 08210

WOOD DOORS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ARCHITECTURAL WOODWORK INSTITUTE (AWI)

AWI Qual Stds (1997) Architectural Woodwork Quality
Standards and Quality Certification Program

FOREST STEWARDSHIP COUNCIL

FSC 1.2 (2000) FSC Principles and Criteria of Forest
Stewardship

FSC 5.3.5 (2003) Forests Certified by FSC-Accredited
Certification Bodies

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80 (1995) Fire Doors and Fire Windows

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

AQMD Rule 1168 (2002) Regulation XI, Rule 1168 Adhesive and
Sealant Applications

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

NWWDA I.S. 1-A (1993) Architectural Wood Flush Doors

NWWDA TM-5 (1990) Split Resistance Test

NWWDA TM-7 (1990) Cycle - Slam Test

NWWDA TM-8 (1990) Hinge Loading Resistance Test

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal
Procedures."

SD-02 Shop Drawings

Doors; G

Submit drawings or catalog data showing each type of door unit.
Drawings and data shall indicate door type and construction, sizes,
thickness, methods of assembly and glazing.

SD-03 Product Data

Doors; G

Accessories

Water-resistant sealer

Sample warranty

SD-04 Samples

Doors

Prior to the delivery of wood doors, submit a sample section of each type of door which shows the stile, rail, veneer, finish, and core construction.

Door finish colors; G

Submit a minimum of three color selection samples.

SD-06 Test Reports

Split resistance

Cycle-slam

Hinge loading resistance

Submit split resistance test report for doors tested in accordance with NWWDA TM-5, cycle-slam test report for doors tested in accordance with NWWDA TM-7, and hinge loading resistance test report for doors tested in accordance with NWWDA TM-8.

SD-07 Certificates

Wood and Wood Based Products; G

Certificate attesting that wood and wood-based products are from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3)

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver doors to the site in an undamaged condition and protect against damage and dampness. Stack doors flat under cover. Support on blocking, a minimum of 4 inches (100 mm) thick, located at each end and at the midpoint of the door. Store doors in a well-ventilated building so that they will not be exposed to excessive moisture, heat, dryness, direct sunlight, or extreme changes of temperature and humidity. Do not store in a building under construction until concrete, masonry work, and plaster are dry. Replace defective or damaged doors with new ones.

1.4 WARRANTY

Warranty shall warrant doors free of defects as set forth in the door manufacturer's standard door warranty.

PART 2 PRODUCTS

2.1 DOORS

Provide doors of the types, sizes, and designs indicated.

2.1.1 Flush Doors

Flush doors shall conform to NWWDA I.S. 1-A. Hollow core doors shall have lock blocks and one inch (25 mm) minimum thickness hinge stile. Stile edge bands of doors to receive natural finish shall be hardwood, compatible with face veneer. Stile edge bands of doors to be painted shall be mill option specie. No visible finger joints will be accepted in stile edge bands. When used, locate finger-joints under hardware.

2.1.1.1 Interior Flush Doors

Provide staved lumber core, Type II flush doors conforming to NWWDA I.S. 1-A with faces of character grade maple. Hardwood veneers shall be plain sliced book matched. Wood door products shall be from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3). No added urea formaldehyde resins shall be utilized in door components.

2.1.2 Door Frames

Frames for interior wood doors to be for clear finish, with 3 piece adjustable jamb units. Provide doors as specified complete with frame, hinges and prepared to receive finish hardware. Wood frame products shall be from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3).

2.2 ACCESSORIES

2.2.1 Additional Hardware Reinforcement

Provide fire rated doors with hardware reinforcement blocking. Size of lock blocks shall be as required to secure the hardware specified. Reinforcement blocking shall be in compliance with the manufacturer's labeling requirements and shall not be mineral material similar to the core.

2.3 FABRICATION

2.3.1 Marking

Each door shall bear a stamp, brand, or other identifying mark indicating quality and construction of the door.

2.3.2 Quality and Construction

Identify the standard on which the construction of the door was based, identify the standard under which preservative treatment was made and identify doors having a Type I glue bond.

2.3.3 Adhesives and Bonds

NWWDA I.S. 1-A. Use Type I bond for exterior doors and Type II bond for interior doors. Adhesive for doors to receive a natural finish shall be non-staining. All adhesives must meet or exceed the VOC limits of South Coast Air Quality Management District AWMD Rule 1168.

2.3.4 Pre-Fitting

At the Contractor's option, doors may be provided factory pre-fit. Doors shall be sized and machined at the factory by the door manufacturer in accordance with the standards under which they are produced. The work shall include sizing, bevelling edges, mortising, and drilling for hardware and providing necessary beaded openings for glass and louvers. Provide the door manufacturer with the necessary hardware samples, and frame and hardware schedules as required to coordinate the work.

2.3.5 Finishes

2.3.5.1 Factory Finish

Provide doors finished at the factory by the door manufacturer as follows: AWI Qual Stds Section 1500, specification for System No. 4 Conversion varnish alkyd urea or System No. 5 Vinyl catalyzed. The coating shall be AWI Qual Stds premium, medium rubbed sheen, closed grain effect. Use stain when required to produce the finish specified for color. Seal edges, cutouts, trim, and wood accessories, and apply two coats of finish compatible with the door face finish. Touch-up finishes that are scratched or marred, or where exposed fastener holes are filled, in accordance with the door manufacturer's instructions. Match color and sheen of factory finish using materials compatible for field application.

2.3.5.2 Color

Provide door finish colors as indicated in Section 09915, COLOR SCHEDULE.

2.3.6 Water-Resistant Sealer

Provide a water-resistant sealer compatible with the specified finish as approved and as recommended by the door manufacturer.

2.4 SOURCE QUALITY CONTROL

Styles of "B" and "C" label fire doors utilizing standard mortise leaf hinges shall meet the following performance criteria:

- a. Split resistance: Average of ten test samples shall be not less than 500 pounds (225 kilograms) load when tested in accordance with NWWDA TM-5.
- b. Cycle-slam: 200,000 cycles with no loose hinge screws or other visible signs of failure when tested in accordance with the requirements of NWWDA TM-7.
- c. Hinge loading resistance: Average of ten test samples shall be not less than 700 pounds (315 kilograms) load when tested for direct

screw withdrawal in accordance with NWWDA TM-8 using a No. 12, 1 1/4 inch (30 mm) long, steel, fully threaded wood screw. Drill 5/32 inch (4 mm) pilot hole, use 1 1/2 inch (40 mm) opening around screw for bearing surface, and engage screw full, except for last 1/8 inch (3 mm). Do not use a steel plate to reinforce screw area.

PART 3 EXECUTION

3.1 INSTALLATION

Before installation, seal top and bottom edges of doors with the approved water-resistant sealer. Seal cuts made on the job immediately after cutting using approved water-resistant sealer. Fit, trim, and hang doors with a 1/16 inch (2 mm) minimum, 1/8 inch (3 mm) maximum clearance at sides and top, and a 3/16 inch (5 mm) minimum, 1/4 inch (6 mm) maximum clearance over thresholds. Provide 3/8 inch (10 mm) minimum, 7/16 inch (11 mm) maximum clearance at bottom where no threshold occurs. Bevel edges of doors at the rate of 1/8 inch in 2 inches (3 mm in 50 mm). Door warp shall not exceed 1/4 inch when measured in accordance with NWWDA I.S. 1-A.

3.1.1 Fire Doors

Install fire doors in accordance with NFPA 80. Do not paint over labels.

3.1.2 Prehung Doors

Install doors in accordance with the manufacturer's instructions and details. Provide fasteners for stops and casing trim within 3 inches (75 mm) of each end and spaced 11 inches (275 mm) on centers maximum. Provide side and head jambs joined together with a dado or notch of 3/16 inch (5 mm) minimum depth.

3.1.3 Acoustic Seals

Install doors in strict accordance with the manufacturer's printed instructions and details. Seal doors swing-type doors at heads and jambs to provide continuous installation. Apply caulk to door frames at jambs and head.

End of Section

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SECTION 09840

ACOUSTICAL WALL AND CEILING TREATMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC 16 (1998) Test Method: Colorfastness to Light

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 423 (1999a) Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

ASTM D 2261 Tear Strength of Textiles

ASTM D 5034 (1995) Breaking Strength and Elongation of Textile Fabrics (Grab Test)

ASTM E 84 (2000a) Surface Burning Characteristics of Building Materials

FOREST STEWARDSHIP COUNCIL (FSC)

FSC 1.2 (2000) FSC Principles and Criteria of Forest Stewardship

FSC 5.3.5 (2003) Forests Certified by FSC - Accredited Certification Bodies

INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS (ICBO)

ICBO Building Code (1997) Uniform Building Code (3 Vol.)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Approved Detail Drawings; G, RO

Drawings showing plan locations, elevations and details.
Drawings shall include details of method of anchorage, location of

doors and other openings, base detail and shape and thickness of materials.

SD-03 Product Data

Installation; G, RO

Manufacturer's installation instructions and recommended cleaning instructions.

Acoustical Wall Panels; G, RO

Manufacturer's descriptive data and catalog cuts.

SD-04 Samples

Acoustical Wall Panels; G, RO

Fabric swatches, minimum 18 inches (450 mm) wide by 24 inches (600 mm) long 2 samples of each color range specified.

SD-07 Certificates

Acoustical Wall Panels; G, RO

Certificates of compliance from an independent laboratory accredited by the National Laboratory Accreditation Program of the National Institute of Standards. A label or listing from the testing laboratory will be acceptable evidence of compliance.

Wood and Wood Based Products; G

Certificate attesting that wood and wood-based products are from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3)

1.3 DELIVERY AND STORAGE

Materials delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variations, dirt, dust, or other contaminants.

1.4 WARRANTY

Manufacturer's standard performance guarantees or warranties that extend beyond a one year period shall be provided.

PART 2 PRODUCTS

2.1 FABRIC COVERED ACOUSTICAL WALL PANELS

Acoustical wall panels shall consist of prefinished factory assembled, seamless fabric covered, fiber glass or mineral fiber core system as described below. Wall panels shall be manufactured to the dimensions and configurations shown on the approved detail drawings. Perimeter edges shall be non-reinforced. Acoustical wall panels installed in non-sprinklered areas must comply with the requirements of ICBO Building Code, Standard 42-

2. The Contractor shall comply with EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

- a. Panel Width: Panel width shall be as detailed.
- b. Panel Height: Panel height shall be as detailed.
- c. Thickness: Panel thickness shall be as required to meet the indicated NRC range.
- d. Fabric Covering, FAB-3, FAB-1: Seamless plain woven 100 percent recycled polyester. Tear strength shall be minimum 29 pounds (129 N), in accordance with ASTM D 2261. Breaking strength shall be 150 pounds (667 N) minimum in accordance with ASTM D 5034. Fabric covering shall be stretched free of wrinkles and then bonded to the edges and back or bonded directly to the panel face, edges, and back of panel a minimum distance standard with the manufacturer. Color fastness to light shall be approximately 40 hours in accordance with AATCC 16.
- e. Fire rating for the complete composite system: Class A, 200 or less smoke density and flame spread less than 25, when tested in accordance with ASTM E 84.
- f. Substrate: Fiber glass or mineral fiber.
- g. Noise Reduction Coefficient (NRC) Minimum: 0.90 ASTM C 423.
- h. Edge Detail: Bevel edge, with metal trims as shown. For metal trims see Section 05500 MISCELLANEOUS METAL.
- i. Core Type: Acoustical/tackable core.
- j. Mounting: Acoustical panels shall be mounted by manufacturer's standard adhesive mounting and with metal trims as shown.
- k. Color: Color shall be in accordance with Section 09915 COLOR SCHEDULE.

2.2 WOOD FACED ACOUSTIC WALL AND CEILING PANELS

Acoustic wall and ceiling panels shall consist of a perforated medium density fiberboard (MDF) with a ribbed (grooved) maple veneer laminated to the face and an acoustically transparent block mat laminated to the back side. Profile shall have a 5/8 inch (16 mm) on center rib spacing. Wood products shall be from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3). No added urea formaldehyde resins shall be used in wood products.

- a. Panel Width: 7-9/16" (19 mm) combined to form fields of panels of size indicated.
- b. Panel Length: Panel length shall be as detailed.
- c. Thickness: Panel thickness 5/8" (16 mm) for wood panel with 1 inch (25.4 mm) insulation panel.

- d. Wood Face: Maple Veneer.
- e. Fire ratio for the complete composite system: Fire treated with Class C.
- f. Fire rating for individual components: Class I compound
- g. Substrate: Fiber glass: 6 to 7 pcf (96 to 112 kg/m²)
- h. Noise Reduction Coefficient (NRC) Minimum: 0.90 ASTM C 423.
- i. Edge Detail: Square edge, with wood trims as shown.
- j. Core Type: Acoustical core.
- k. Mounting: Acoustical panels shall be mounted by manufacturer's standard adhesive mounting and with metal trims as shown.
- l. Color: Color shall be in accordance with Section 09915 COLOR SCHEDULE.

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

Walls shall be clean, smooth, oil free and prepared in accordance with panel manufacturer's instructions. Installation shall not begin until all wet work, such as, plastering, painting, and concrete are completely dry.

3.2 INSTALLATION

Panel installation shall be by personnel familiar with and normally engaged in installation of acoustical wall panels. Panels shall be applied in accordance with the manufacturer's installation instructions and as indicated in the drawings.

3.3 CLEANING

Following installation, dirty or stained panel surfaces shall be cleaned in accordance with manufacturer's instructions and left free from defects. Panels that are damaged, discolored, or improperly installed shall be removed and new panels provided as directed.

End of Section

SECTION 12705

FURNITURE SYSTEMS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
|------------|---|
| ASTM C 423 | (1999a) Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method |
| ASTM E 84 | (2000a) Surface Burning Characteristics of Building Materials |
| ASTM E 290 | (1997a) Bend Testing of Material for Ductility |

BIFMA INTERNATIONAL (BIFMA)

- | | |
|------------|------------------------------|
| BIFMA X5.5 | (1989) Desk Products - Tests |
| BIFMA X5.6 | (1993) Panel Systems - Tests |

CALIFORNIA AIR RESOURCES BOARD

- | | |
|-----------|---|
| AQMD 8-51 | (2001) Bay Area Air Quality Management District Regulation 8, Rule 51 Adhesive and Sealant Products |
|-----------|---|

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

- | | |
|------------------------|--|
| EIA ANSI/TIA/EIA-569-A | (1998) Commercial Building Standard for Telecommunications Pathways and Spaces |
|------------------------|--|

FOREST STEWARDSHIP COUNCIL

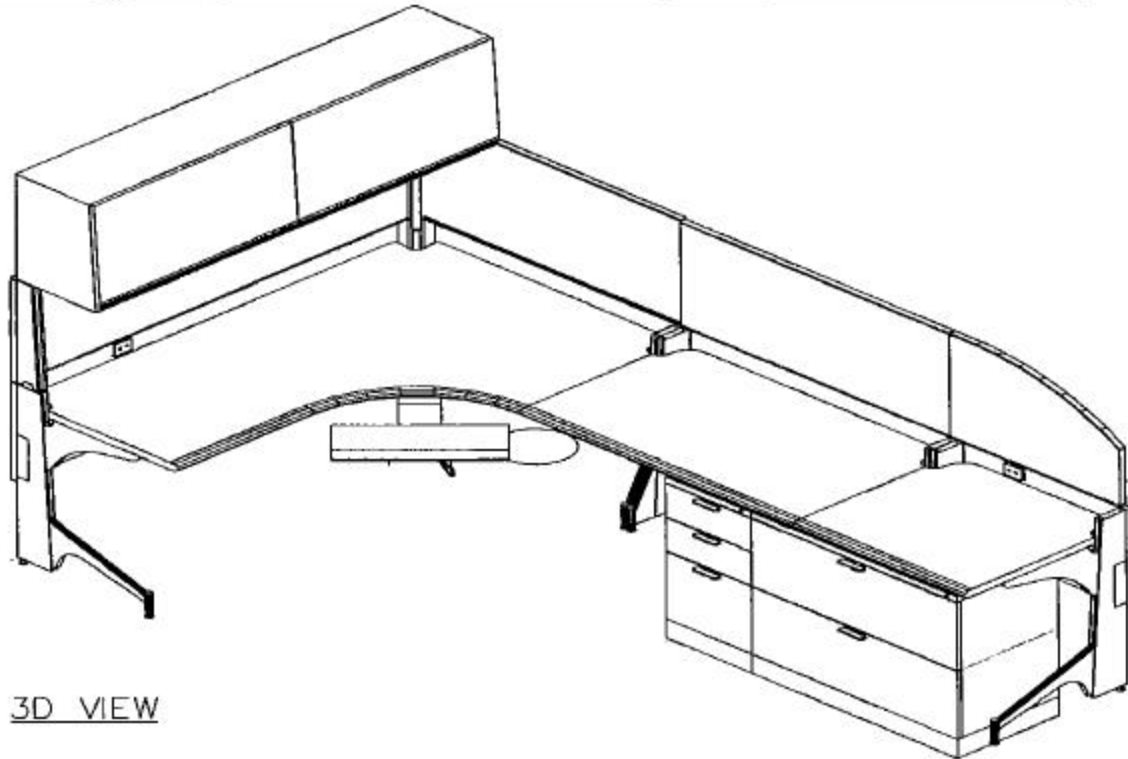
- | | |
|-----------|---|
| FSC 1.2 | (2000) FSC Principles and Criteria of Forest Stewardship |
| FSC 5.3.5 | (2003) Forests Certified by FSC-Accredited Certification Bodies |

GREEN SEAL

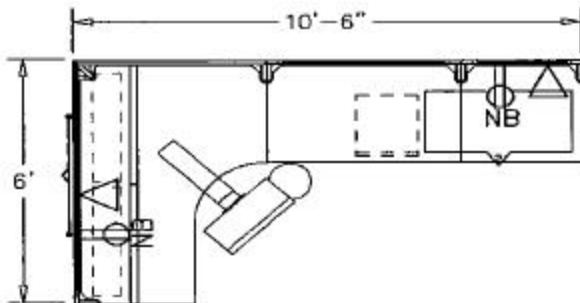
- | | |
|-------|---|
| GS-11 | (1993) Standard Establishes Environmental Requirements for Paints |
|-------|---|

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

- | | |
|-----------|--|
| NEMA WD 1 | (1999) General Color Requirements for Wiring Devices |
|-----------|--|



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #1

HERMAN MILLER "PASSAGE"

VENEER WORKSURFACES

VENEER STORAGE DOORS

FABRIC TACK PANELS

PAINTED METAL COMPONENTS

LOCATIONS:

DIRECTOR'S OFFICE 101F

NOTE: COORDINATE WITH ELECTRICAL
AND TELECOM DRAWINGS.

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 1, REV

REV. DATE
03-26-03.24.03

0209

A.OTHBERG

BUSINESS INTERIORS
BiNW
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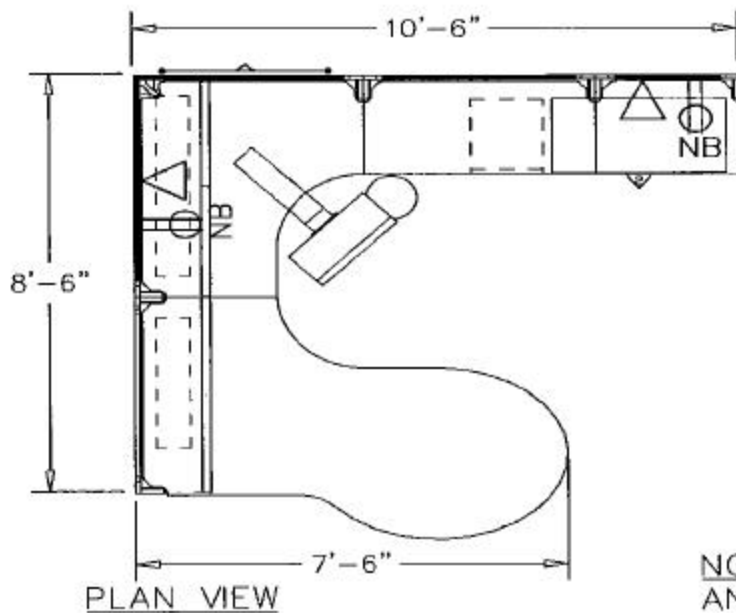
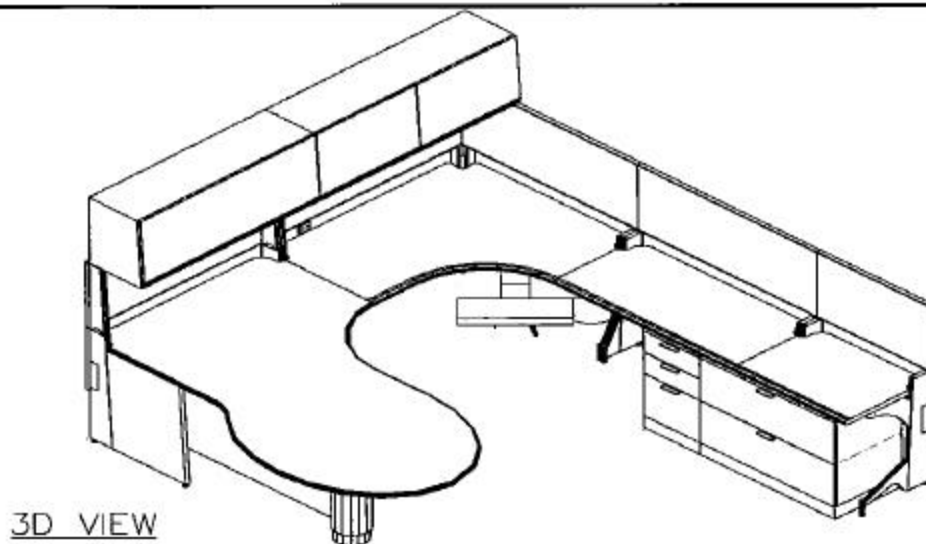
FORT LEWIS, WA
BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-8400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP.1	
29V-3618G-2N	@File,FS Lat Slpd Pull,2 Dwr	1
M19V-1518G-BBF	@Ped,Mobile,Slpd Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
PA2VC.AZ32P	+Crm,Ext,30x72x48x30,Ven Top/Wd Cmp Ed,L C-Leg/R Rec Leg,Pwr	1
PB1VC.DM23P	@Rec,30x30,Ven Top/Wd Cmp Ed,L Rec Leg/R C-Leg,Pwr	1
PB1VC.DQ22P	@Rec,30x48,Ven Top/Wd Cmp Ed,L Rec Leg/R Rec Leg,Pwr	1
PH211.30S	+Screen, Arc, 18In H Lx10In H Rm Straight End	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1848S	+Screen,Stack,Straight End	1
PH200.1872L	+Screen,Stack,Bev R End for L Side of Corner	1
PJ111.71V	@Flipper Door Unit,Cnr,Wt-Red,Veneer Front	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

PRINT DATE: 4/4/2003



SCALE

NTS

SYSTEMS FURNITURE TYPICAL #2A

HERMAN MILLER "PASSAGE"
FIBER LAMINATE WORKSURFACES
VENEER STORAGE DOORS
FABRIC TACK PANELS
PAINTED METAL COMPONENTS

LOCATIONS:

OFFICE 101C, OFFICE 101D,
OFFICE 101E, OFFICE 101I,
OFFICE 101J, OFFICE 101K

NOTE: COORDINATE WITH ELECTRICAL
AND TELECOM DRAWINGS.

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 2A, REV

REV. DATE
03-26-03, 23.03

0209

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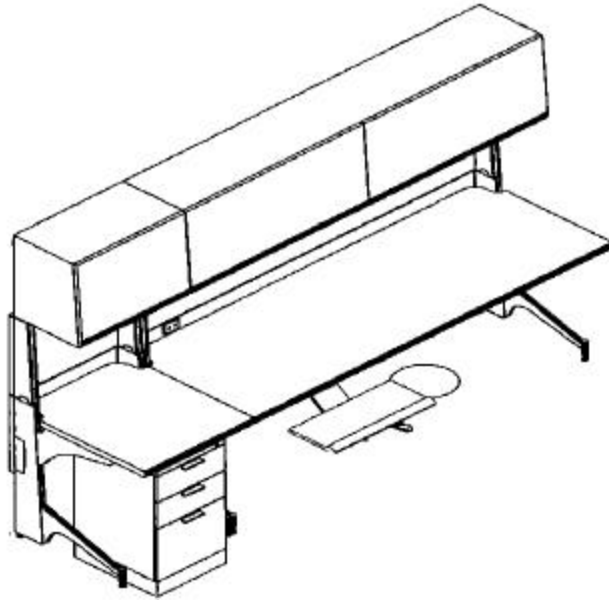
FORT LEWIS, WA
BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

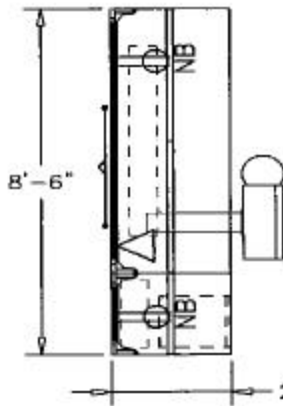
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 2A	
29V-3618G-2N	@File,FS Lat Slpd Pull,2 Dwr	1
M19V-1518G-BBF	@Ped,Mobile,Slpd Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
PA2LC.CM22P	+Crn,Ext,30x54x48x24,Lam Top/Vin Ed,L Rec Leg/R Rec Leg,Pwr	1
PB1LC.DB23P	+Rec,24x30,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DE22P	+Rec,24x48,Lam Top/Vin Ed,L Rec Leg/R Rec Leg,Pwr	1
PC3LC.HB42N	+Obl Pen,90x30,Lam Top/Vin Ed,L Full End/R Rec Leg,Nonpwr	1
PH200.1830S	+Screen,Stack,Straight End	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1848S	+Screen,Stack,Straight End	2
PH200.1854L	+Screen,Stack,Bev R End for L Side of Corner	1
PJ101.48V	@Flipper Door Unit,Wt-Red,Veneer Front	1
PJ101.54V	@Flipper Door Unit,Wt-Red,Veneer Front	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	1
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PM130.48M	+Task Light,Basic,Can/NY,3500K	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

PRINT DATE: 4/4/2003



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #2B

HERMAN MILLER "PASSAGE"
FIBER LAMINATE WORKSURFACES
VENEER STORAGE DOORS
FABRIC TACK PANELS
PAINTED METAL COMPONENTS

LOCATIONS:

OFFICE 101R, SCIF 105A

NOTE: COORDINATE WITH ELECTRICAL
AND TELECOM DRAWINGS.

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
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FT. LEWIS
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TYPICAL 2B

REV. DATE
03-26-03

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BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST

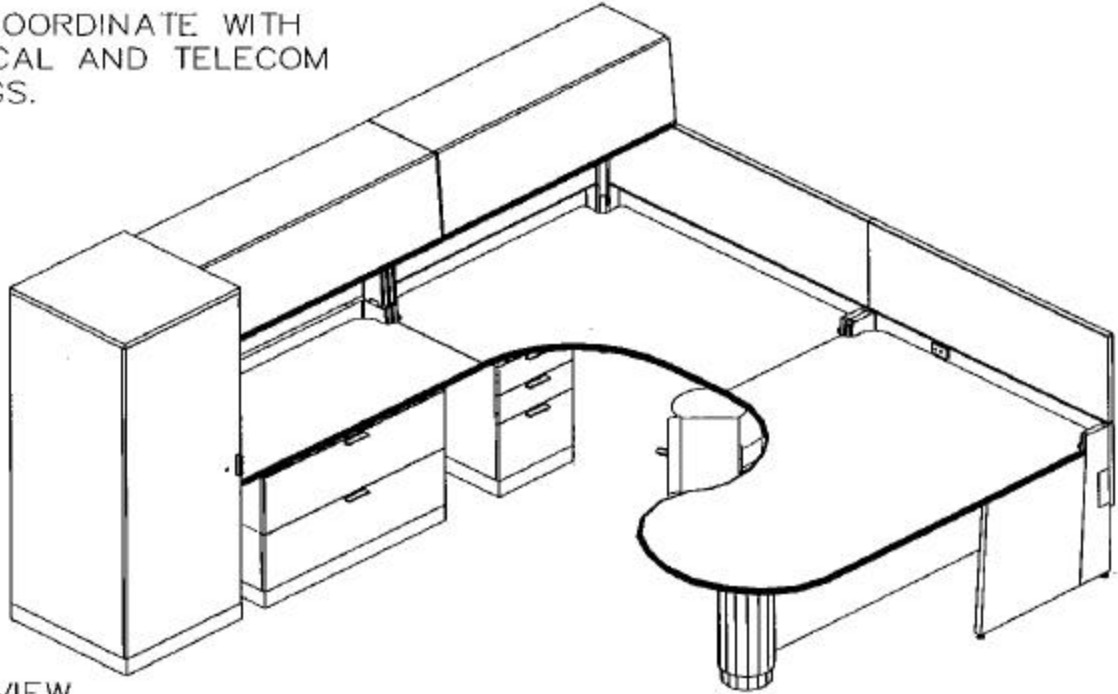
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

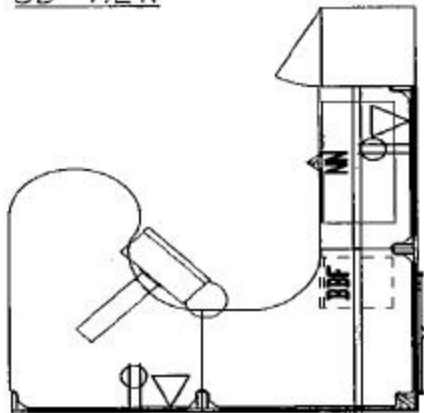
Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 2B	
M19V-1518G-BBF	@Ped,Mobile,Slpd Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
PB1LC.DB33P	+Rec,24x30,Lam Top/Vin Ed,L C-Leg/R C-Leg,Pwr	1
PB1LC.DV33P	+Rec,30x78,Lam Top/Vin Ed,L C-Leg/R C-Leg,Pwr	1
PH200.1824S	+Screen,Stack,Straight End	1
PH200.1878S	+Screen,Stack,Straight End	1
PJ101.78V	@Flipper Door Unit,Wt-Red,Veneer Front	1
PJ101.24V	@Flipper Door Unit,Wt-Red,Veneer Front	1
PM130.60M	+Task Light,Basic,Can/NY,3500K	1
PM130.24M	+Task Light,Basic,Can/NY,3500K	1
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

PRINT DATE: 4/4/2003

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #3
HERMAN MILLER "PASSAGE"
FIBER LAMINATE WORKSURFACES
VENEER STORAGE DOORS
FABRIC TACK PANELS
PAINTED METAL COMPONENTS

CIRCUIT LOCATIONS:

- SP- TECH CONTROL OFFICE 105C,
- SP- WAR GAME SPCL. OFFICE 105D,
- NA- SITE MGR'S OFFICE 110D,
- C4- TEAM CHIEF OFFICE 117B,
- C4- TEAM CHIEF OFFICE 118B,
- C4- TEAM CHIEF OFFICE 119B

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 3, REV

REV DATE
03-26-03.31.03

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BATTLE SIMULATION CENTER

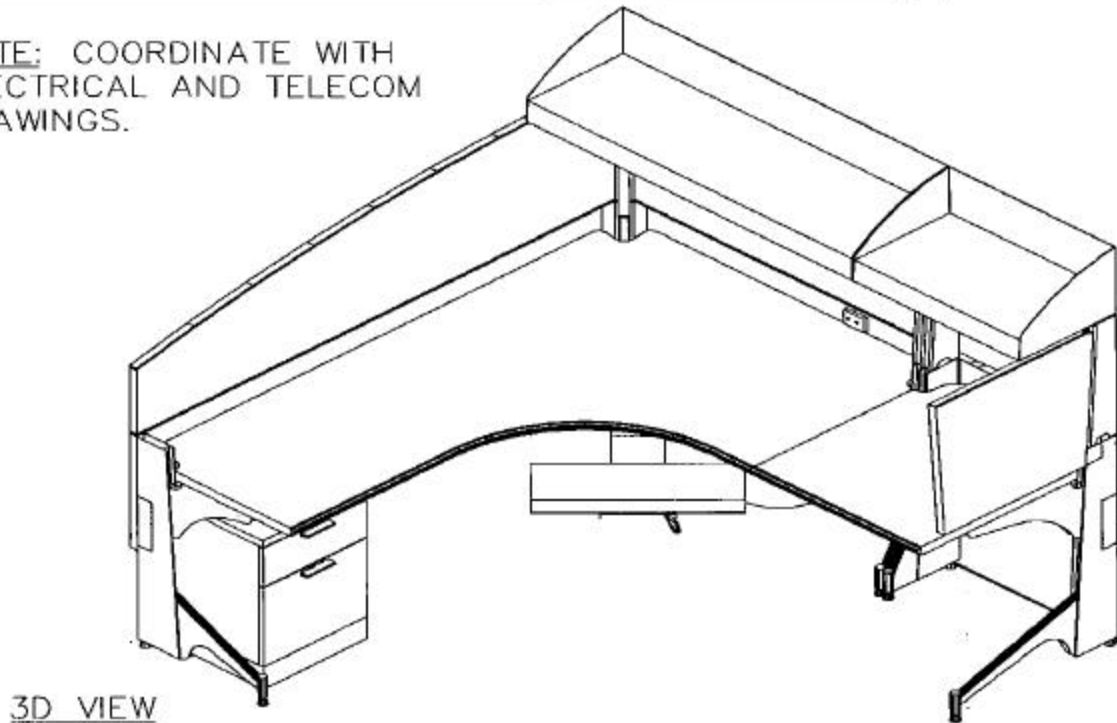
TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

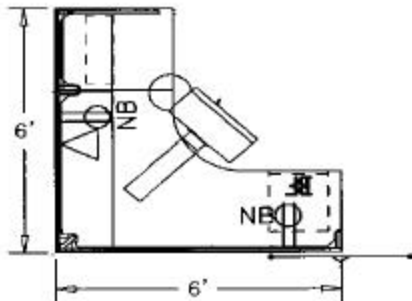
Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 3	
29V-3618G-2N	@File,FS Lat Slpd Pull,2 Dwr	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
M19V-1518G-BBF	@Ped,Mobile,Slpd Pull,B/B/F	1
PA2LC.CM22P	+Crn,Ext,30x54x48x24,Lam Top/Vin Ed,L Rec Leg/R Rec Leg,Pwr	1
PB1LC.DE23P	+Rec,24x48,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PC2LC.GE42P	+Ellp Pen,78x30,Lam Top/Vin Ed,L Full End/R Rec Leg,Pwr	1
PH200.1848S	+Screen,Stack,Straight End	2
PH200.1854L	+Screen,Stack,Bev R End for L Side of Corner	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PJ101.48V	@Flipper Door Unit,Wt-Red,Veneer Front	1
PJ111.47V	@Flipper Door Unit,Cnr,Wt-Red,,Veneer Front	1
PM130.24M	+Task Light,Basic,Cen/NY,3500K	1
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PM130.36M	+Task Light,Basic,Cen/NY,3500K	1
49V-2424R-BX	@Twr,Stg,Slpd Pull,Hng-Wdrb R/4 Adj Sh (discontinuing 12/6/02)	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

PRINT DATE: 4/4/2003

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #4
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC FLIPPER DOORS
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS
LOCATIONS:
TRANISENT OFFICES 102A

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 4, REV

REV. DATE
03-26-03.24.03

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A.OTHBERG

BUSINESS INTERIORS
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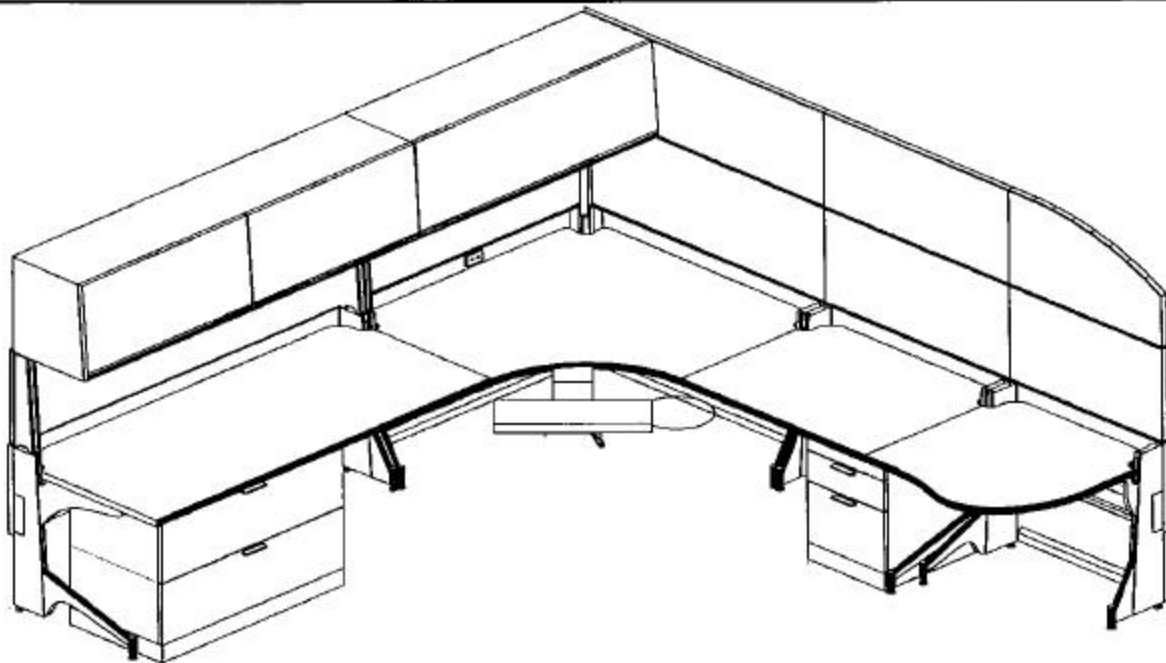
FORT LEWIS, WA
BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

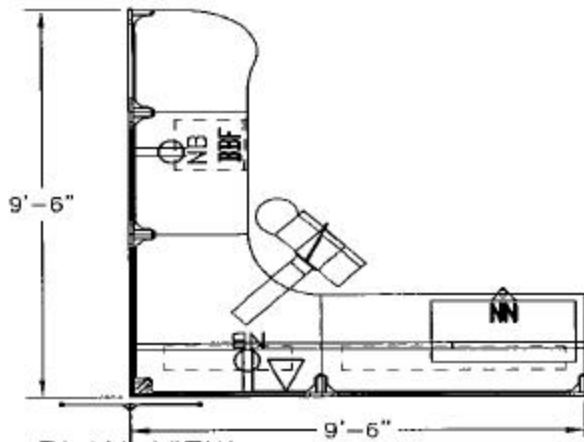
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 4	
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PA2LC.AQ32P	+Crn,Ext,24x72x48x30,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PB1LC.DL23P	+Rec,30x24,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PH200.1824S	+Screen,Stack,Straight End	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH210.72L	+Screen,Arc,10In H Lx18In H R,Bev R End for L Corner	1
PM130.24M	+Task Light,Basic,Can/NY,3500K	1
M19P-1518G-BF	+Ped,Mobile,Slpd Pull,B/F	1
PH500.30	+Side Screen,30In W	1
PJ510.47	+Shelf,Cnr,47In W	1
PJ500.24	+Shelf,24In W	1
G7740.T	+Mouse Tray,Keybd Tray Alt	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

PRINT DATE: 4/4/2003



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #5

HERMAN MILLER "PASSAGE"
FIBER LAMINATE WORKSURFACES
FABRIC FLIPPER DOORS
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS

LOCATIONS:

ADMINISTRATION 105A

NOTE: COORDINATE WITH ELECTRICAL
AND TELECOM DRAWINGS.

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 5, REV.

REV. DATE
03-26-03 / 29/03

0209

A.OTHBERG

BUSINESS INTERIORS
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FORT LEWIS, WA
BATTLE SIMULATION CENTER

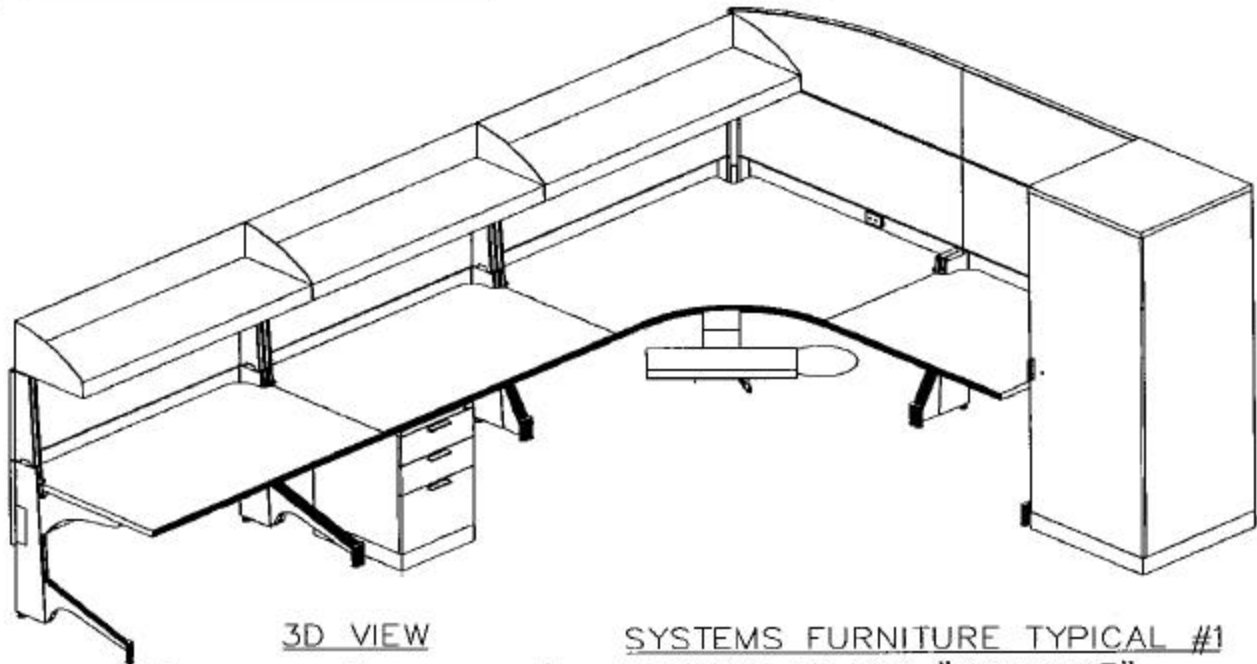
TYPICAL WORKSTATION COMPONENTS LIST

HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

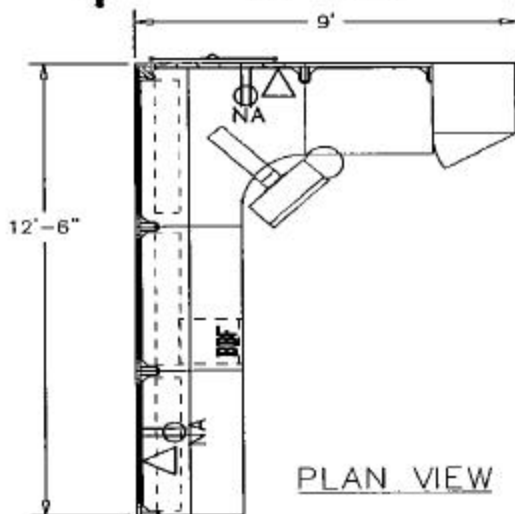
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 5	
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	1
PM130.60M	+Task Light,Basic,Can/NY,3500K	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PA1LA.AE22P	+Cnr,30x48x48x30,Lam Top/Vin Ed,L & R Rec Leg,Pwr	1
PB1LA.DN23P	+Rec,30x36,Lam Top/Vin Ed,L Rec Leg/R C- Leg,Pwr	1
PB1LC.DT32P	+Rec,30x66,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PB3LA.RB32N	+Ext,Lam Top/Vin Ed,30x30D R Ext w/L C- Leg/R Rec Leg,Nonpwr	1
PH200.1830S	+Screen,Stack,Straight End	1
PH200.1836S	+Screen,Stack,Straight End	2
PH200.1848L	+Screen,Stack,Bev R End for L Side of Corner	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	2
PH200.1866S	+Screen,Stack,Straight End	1
PH211.30S	+Screen,Arc,18In H Lx10In H R,Straight End	1
PJ101.66B	+Flipper Door Unit,Wt-Red,Fabric Front	1
PJ111.47B	+Flipper Door Unit,Cnr,Wt-Red.,Fabric Front	1
M19P-1518G- BBF	+Ped,Mobile,Slpd Pull,B/B/F	1
29P-3618G-2N	+File,FS Lat Slpd Pull,2 Dwr	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

PRINT DATE: 4/4/2003



3D VIEW



PLAN VIEW

SCALE
NTS

SYSTEMS FURNITURE TYPICAL #1
HERMAN MILLER "PASSAGE"
FIBER LAMINATE WORKSURFACES
VENEER STORAGE DOORS
FABRIC TACK PANELS
PAINTED METAL COMPONENTS
LOCATIONS:

VIP OFFICE 110A, VIP OFFICE 110B,
VIP OFFICE 110C

NOTE: COORDINATE WITH ELECTRICAL
AND TELECOM DRAWINGS.

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 7, REV

03-26-03 REV. DATE

0209

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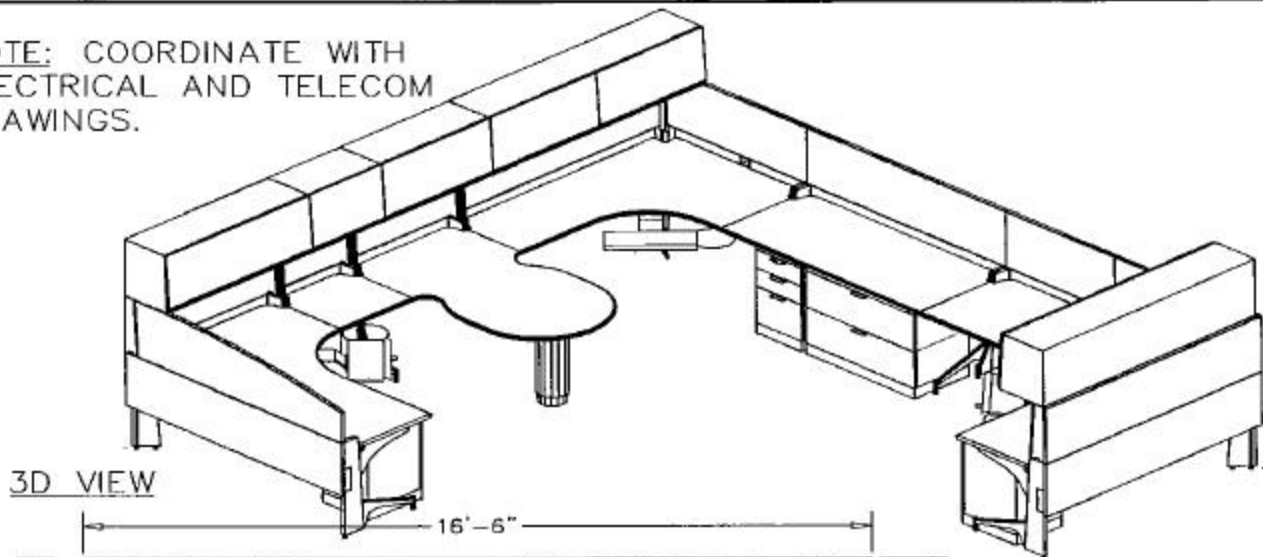
TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-8400

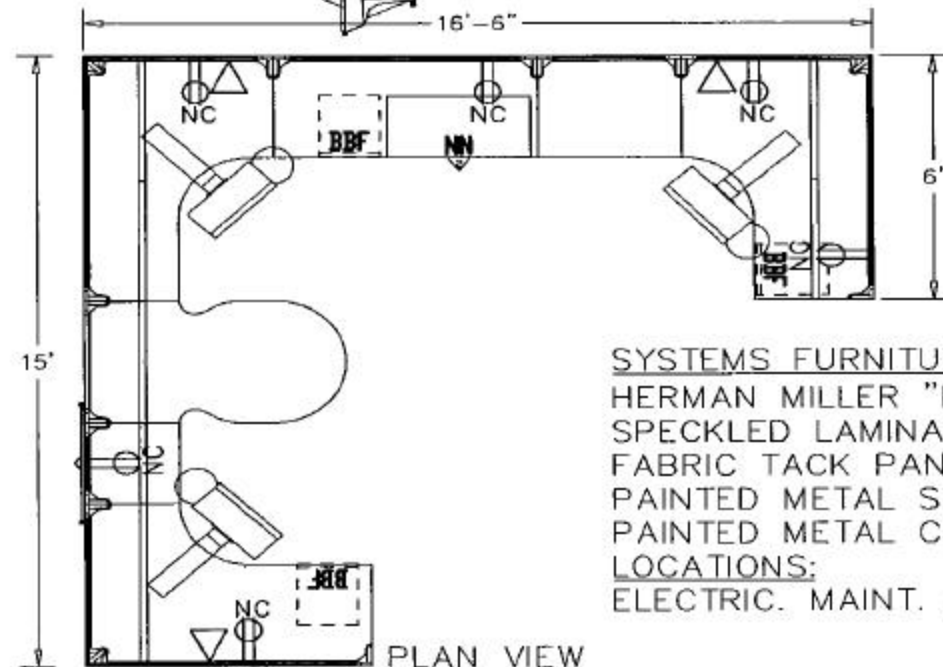
Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 7	
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PM130.48M	+Task Light,Basic,Cnr/NY,3500K	3
K1311.A	+Receptacle,4 Clr,15 Amp,Duplex,Cir A	1
PJ500.48	+Shelf,48In W	2
PJ510.53	+Shelf,Cnr,53In W	1
PA2LC.CN22P	+Cnr,Ext,30x54x48x30,Lam Top/Vin Ed,L Rec Leg/R Rec Leg,Pwr	1
PB1LC.DN23P	+Rec,30x36,Lam Top/Vin Ed,L Rec Leg/R C- Leg,Pwr	1
PB1LC.DQ32P	+Rec,30x48,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PB1LC.DQ33P	+Rec,30x48,Lam Top/Vin Ed,L C-Leg/R C- Leg,Pwr	1
PH200.1836S	+Screen,Stack,Straight End	2
PH200.1848L	+Screen,Stack,Bev R End for L Side of Corner	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1848S	+Screen,Stack,Straight End	2
PH210.48S	+Screen,Arc,10In H Lx18In H R,Straight End	1
M19V-1518G- BBF	@Ped,Mobile,Slpd Pull,B/B/F	1
49V-2424R-BX	@Twr,Stg,Slpd Pull,Hng-Wdrb R/4 Adj Sh (discontinuing 12/6/02)	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

PRINT DATE: 4/4/2003

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SYSTEMS FURNITURE TYPICAL #9
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS
LOCATIONS:
ELECTRIC. MAINT. ADMINISTRATION 116D

SCALE
NTS

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 9, REV

03-26-03 REV DATE

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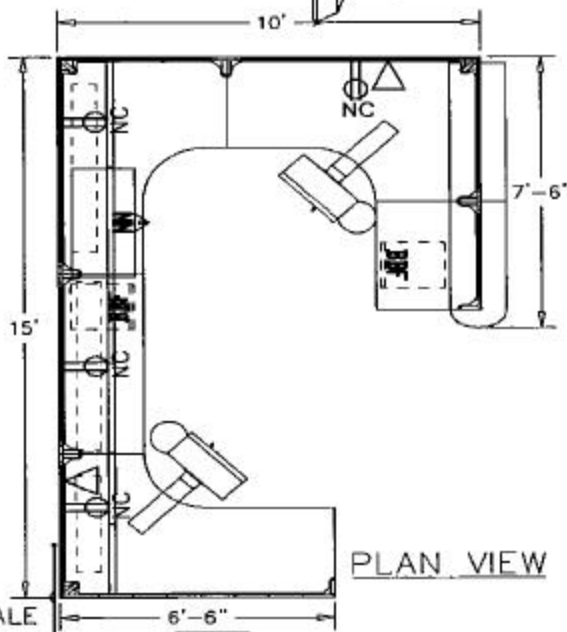
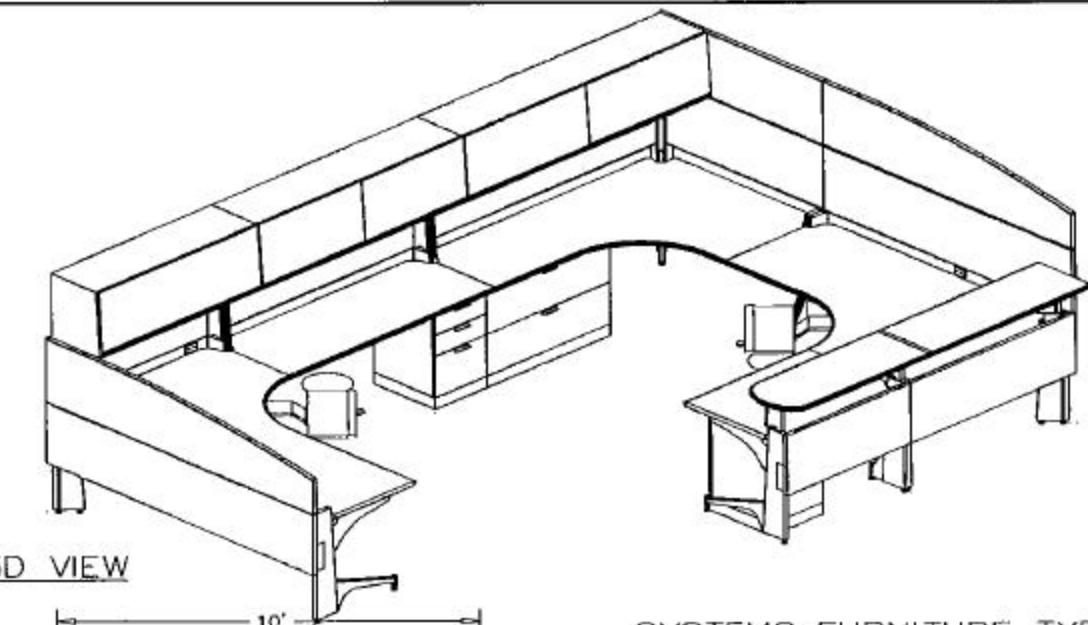
TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 9	
PG210.06	+Pwr Entry,Dir Conn 6FI L	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	3
PJ101.24P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ101.36P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ101.48P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ111.71P	+Flipper Door Unit,Cnr,Wt-Red,,Paint Front	2
PA2LC.AQ32P	+Crm,Ext,24x72x48x30,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PA2LC.AU23P	+Crm,Ext,30x72x48x24,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DA23P	+Rec,24x24,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DN23P	+Rec,30x36,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DT23P	+Rec,30x66,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PC4LE.KG22P	+Rnd-End Pen,Lam Top/Vin Ed,24x36x24x66, Pwr	1
PH200.1824S	+Screen,Stack,Straight End	1
PH200.1836S	+Screen,Stack,Straight End	1
PH200.1836S	+Screen,Stack,Straight End	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1866S	+Screen,Stack,Straight End	1
PH200.1872L	+Screen,Stack,Bev R End for L Side of Corner	1
PH210.72L	+Screen,Arc,10In H Lx18In H R,Bev R End for L Corner	1
M19P-1518G-BBF	+Ped,Mobile,Slpd Pull,B/B/F	3
29P-3618G-2N	+File,FS Lat Stpd Pull,2 Dwr	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	3
G7740.T	+Mouse Tray,Keybd Tray Att	3
G1314.	+Elec Dist,Work Surf-Attached	3
G1320	+Voice/Data Outlet,Work Surf-Attached	3

PRINT DATE: 4/4/2003

3D VIEW



SCALE
NTS

SYSTEMS FURNITURE TYPICAL #10
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC FLIPPER DOORS
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS
LOCATIONS:
SUPPLY ADMINISTRATION 116A

NOTE: COORDINATE WITH ELECTRICAL
AND TELECOM DRAWINGS.

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 10, REV

03-26-03 REV. DATE

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BATTLE SIMULATION CENTER

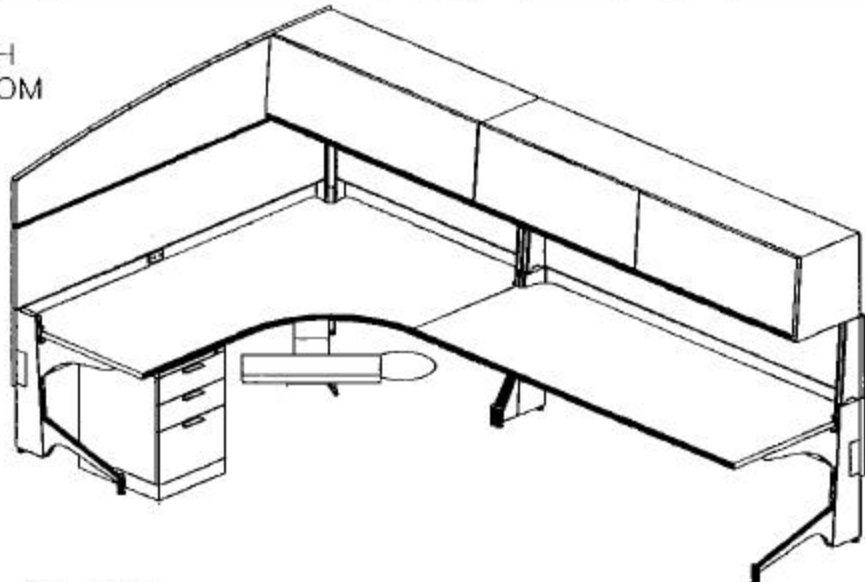
TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-8400

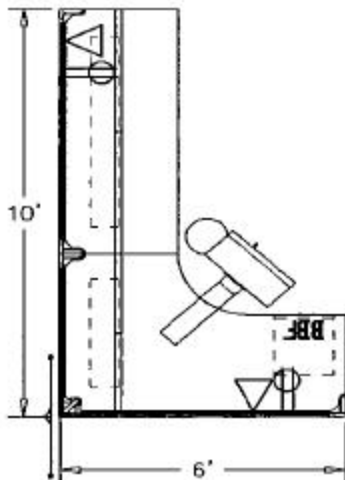
Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 10	
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
PM130.60M	+Task Light,Basic,Can/NY,3500K	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	2
PF111.36L	+Trans Surf,Rec End,11In Abv Ht Strt Ed,Lam Top/Vin Ed	1
PF201.47L	+Crn Trans Surf,Rec End,11" above Dsk Mod Ht,Crn Dsk w/scr, Lam Top/Vin Ed	1
PA2LC.AQ32P	+Crn,Ext,24x72x48x30,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PA2LC.AW32P	+Crn,Ext,30x78x48x24,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PA2LC.AZ22P	+Crn,Ext,30x72x48x30,Lam Top/Vin Ed,L Rec Leg/R Rec Leg,Pwr	1
PB1LC.DG23P	+Rec,24x60,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DN23P	+Rec,30x36,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	3
PH200.1880S	+Screen,Stack,Straight End	1
PH200.1872S	+Screen,Stack,Straight End	1
PH211.72S	+Screen,Arc,18In H Lx10In H R,Straight End	1
PJ101.60B	+Flipper Door Unit,Wt-Red,Fabric Front	1
PJ111.47B	+Flipper Door Unit,Cnr,Wt-Red,,Fabric Front	1
PJ111.71B	+Flipper Door Unit,Cnr,Wt-Red,,Fabric Front	1
M19P-1518G-BBF	+Ped,Mobile,Slpd Pull,B/B/F	2
29P-3618G-2N	+File,FS Lat Slpd Pull,2 Dwr	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	2
G7740.T	+Mouse Tray,Keybd Tray Att	2
G1314.	+Elec Dist,Work Surf-Attached	2
G1320	+Voice/Data Outlet,Work Surf-Attached	2

PRINT DATE: 4/4/2003

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE
NTS

SYSTEMS FURNITURE TYPICAL #11A
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC FLIPPER DOORS
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS

CIRCUIT

NB- OFFICE 1010
NB- ADMIN. OFFICES 101T,
NA- LIBRARY OFFICE 111B,
NC- SUPPLY ADMINISTRATION 116A,
C9- COMM. OFFICE 121A

LOCATIONS:

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 11A, REV

REV. DATE
03-26-03.31.03

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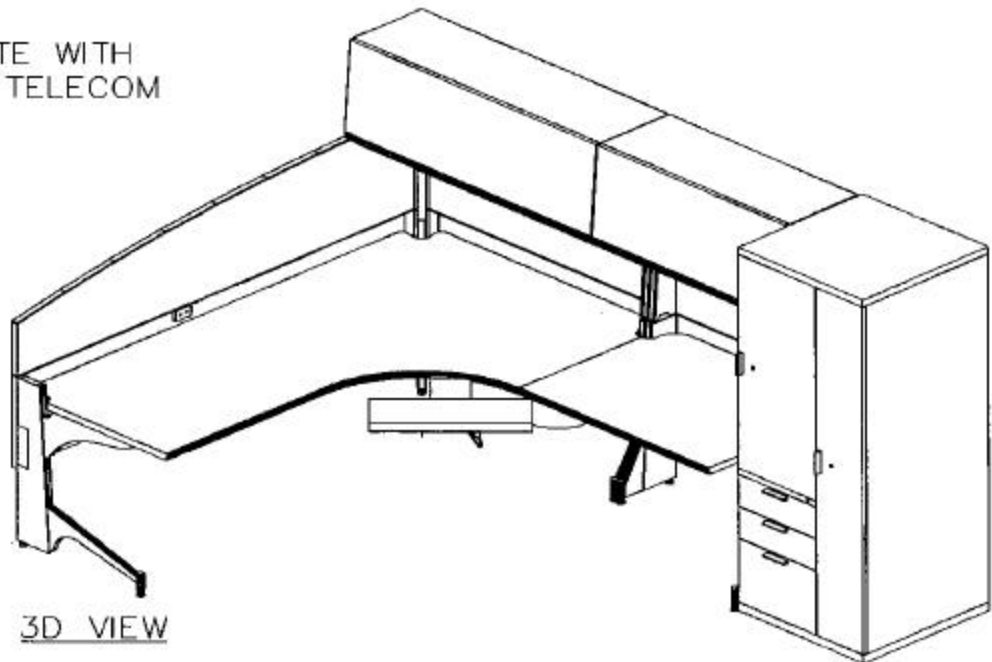
TYPICAL WORKSTATION COMPONENTS LIST

HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

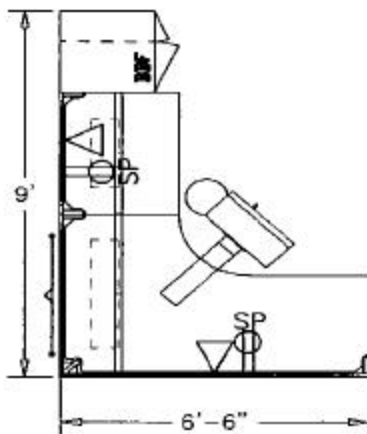
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 11A	
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	1
PM130.60M	+Task Light,Basic,Can/NY,3500K	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PJ101.72P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ111.47P	+Flipper Door Unit,Cnr,Wt-Red,,Paint Front	1
PA2LC.AZ32P	+Crn,Ext,30x72x48x30,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PB1LC.DU23P	+Rec,30x72,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PH200.1848L	+Screen,Stack,Bev R End for L Side of Corner	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1872S	+Screen,Stack,Straight End	1
PH210.72L	+Screen,Arc,10In H Lx18In H R,Bev R End for L Corner	1
M19P-1518G-BBF	+Ped,Mobile,Slpd Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #11B
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
PAINTED METAL FLIPPER DOORS
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS
LOCATIONS:
ENTRY CONTROL 105B

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 11B, REV

03-26-03

REV. DATE

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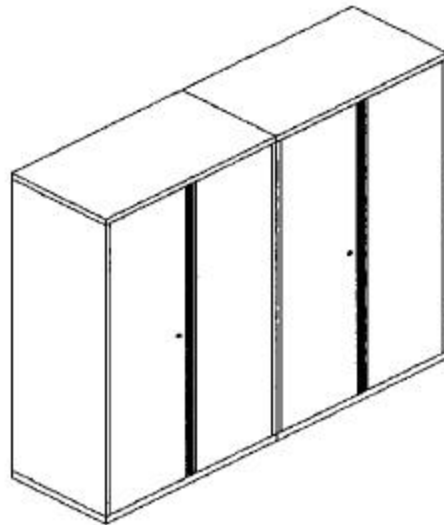
FORT LEWIS, WA
BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

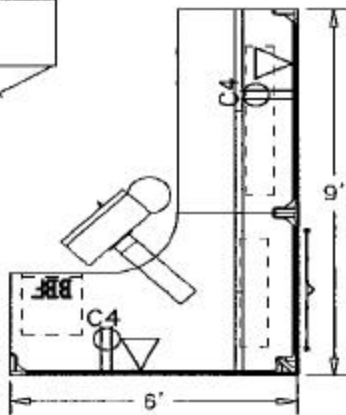
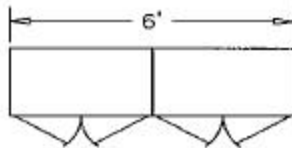
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 11B	
MTV6P.24RFS	+Vrt Twr w/Wrdrb Rt & Stg Case,Slp Pull,64H 24W,F/F,Adj Shlfs,Sm Stil	1
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PM130.24M	+Task Light,Basic,Can/NY,3500K	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PJ101.36P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ111.47P	+Flipper Door Unit,Cnr,Wt-Red,,Paint Front	1
PA2LC.BA32P	+Crm,Ext,30x78x48x30,Lam Top/Vin Ed,L C- Leg/R Rec Leg,Pwr	1
PB1LC.DN23P	+Rec,30x36,Lam Top/Vin Ed,L Rec Leg/R C- Leg,Pwr	1
PH200.1836S	+Screen,Stack,Straight End	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH210.78L	+Screen,Arc,10In H Lx18In H R,Bev R End for L Corner	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



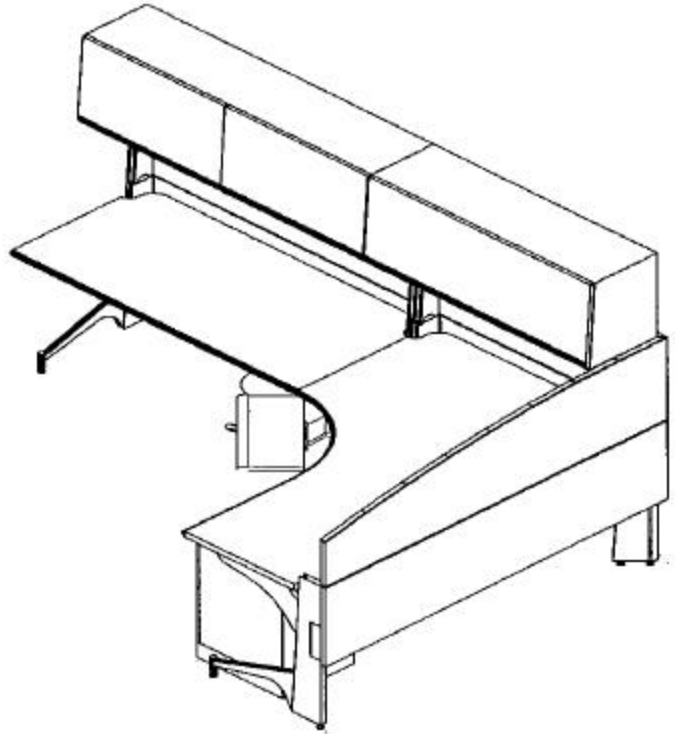
3D VIEW



PLAN VIEW

SCALE

NTS



SYSTEMS FURNITURE TYPICAL #11C
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
PAINTED METAL FLIPPER DOORS
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS
LOCATIONS:
FACILITY MAINT. OFFICE 107B

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
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TYPICAL 11C, REV

03-26-03 REV. DATE

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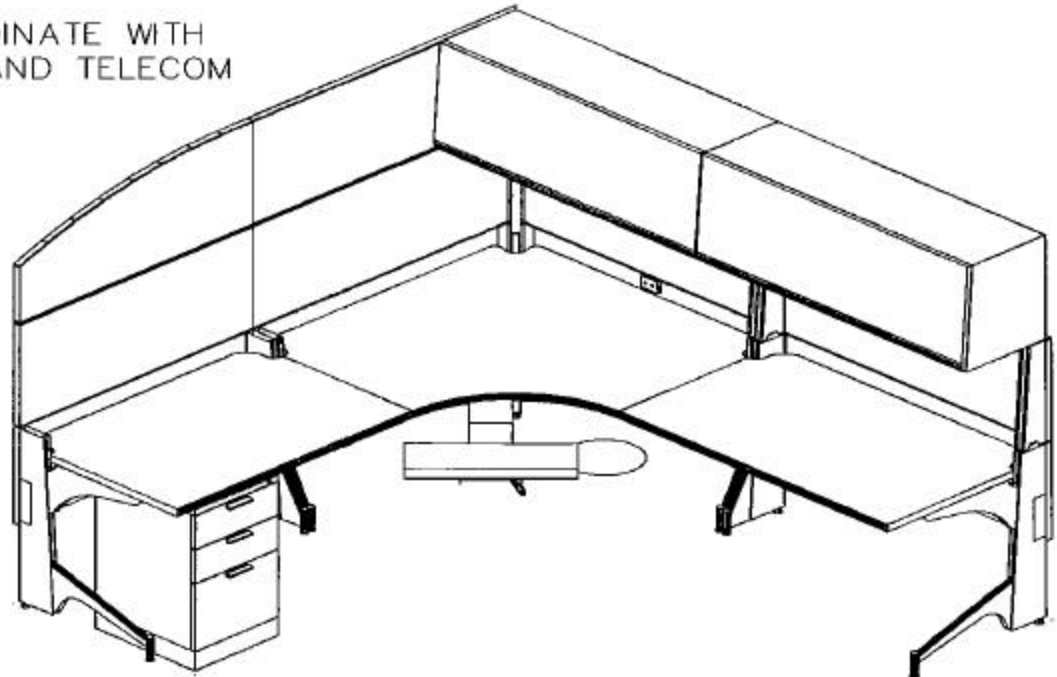
TYPICAL WORKSTATION COMPONENTS LIST

HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

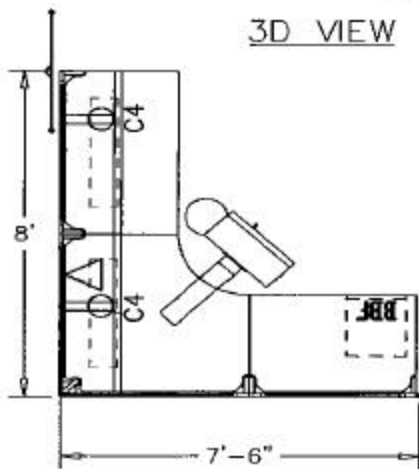
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 11C	
46-3620-66	+Storage Case Std Pull 36W 20D 65-5/8H	2
PG210.06	+Pwr Entry,Dir Conn 6Fl L	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	1
PM130.48M	+Task Light,Basic,Can/NY,3500K	1
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PH210.72L	+Screen,Arc,10In H Lx18In H R,Bev R End for L Corner	1
PJ101.60P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ111.47P	+Flipper Door Unit,Cnr,Wt-Red.,Paint Front	1
PA2LC.AZ32P	+Crn,Ext,30x72x48x30,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PB1LC.DS23P	+Rec,30x60,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1860S	+Screen,Stack,Straight End	1
M19P-1518G-BBF	+Ped,Mobile,Std Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #11D
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
PAINTED METAL FLIPPER DOORS
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS
LOCATIONS:

CENTRAL CONTROL 117A,
CENTRAL CONTROL 119C

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 11D, REV

03-26-03 REV. DATE

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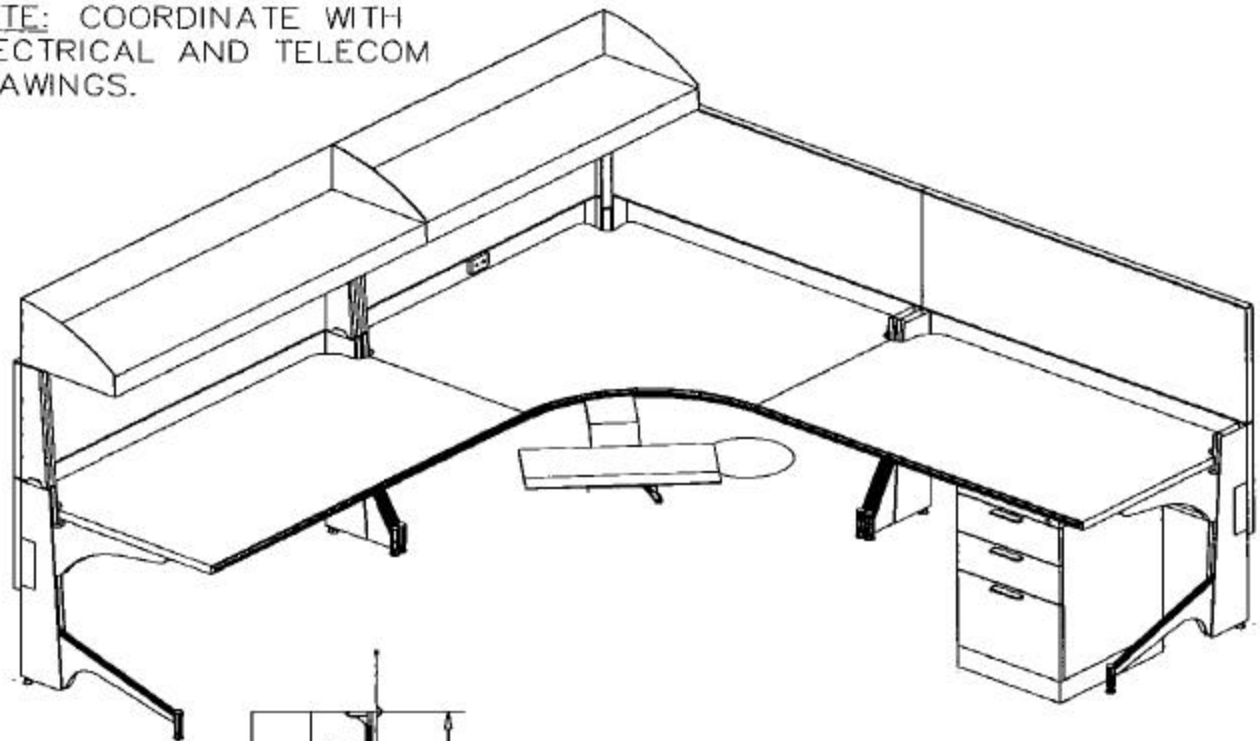
TYPICAL WORKSTATION COMPONENTS LIST

HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

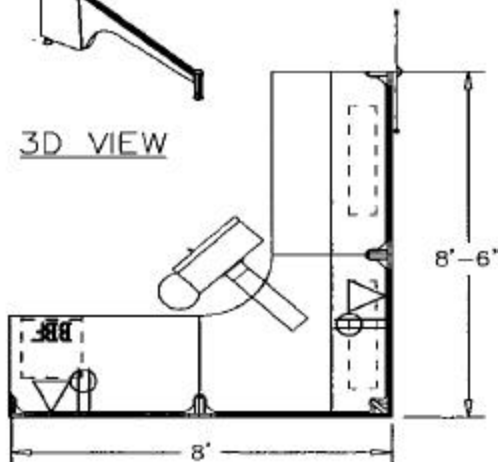
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 11D	
PG210.06	+Pwr Entry,Dir Conn 6Fl L	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PJ101.48P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ111.47P	+Flipper Door Unit,Cnr,Wt-Red,,Paint Front	1
PA1LC.AE22P	+Cnr,30x48x48x30,Lam Top/Vin Ed,L & R Rec Leg,Pwr	1
PB1LC.DP32P	+Rec,30x42,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PB1LC.DQ23P	+Rec,30x48,Lam Top/Vin Ed,L Rec Leg/R C- Leg,Pwr	1
PH200.1842S	+Screen,Stack,Straight End	1
PH200.1848L	+Screen,Stack,Bev R End for L Side of Corner	2
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1848S	+Screen,Stack,Straight End	1
PH210.42S	+Screen,Arc,10In H Lx18In H R,Straight End	1
M19P-1518G- BBF	+Ped,Mobile,Slpd Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #12A
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS

CIRCUIT LOCATIONS:

SP- SCIF 105A,
C4- CENTRAL CONTROL 117A

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 12A

03-26-03 REV. DATE

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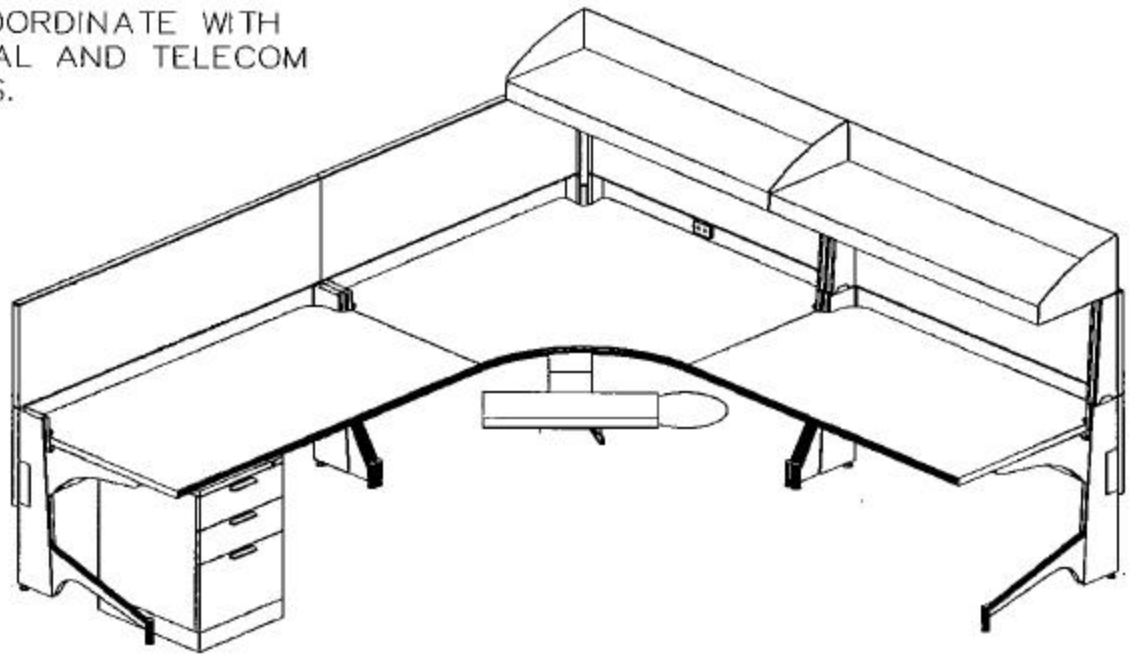
FORT LEWIS, WA
BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

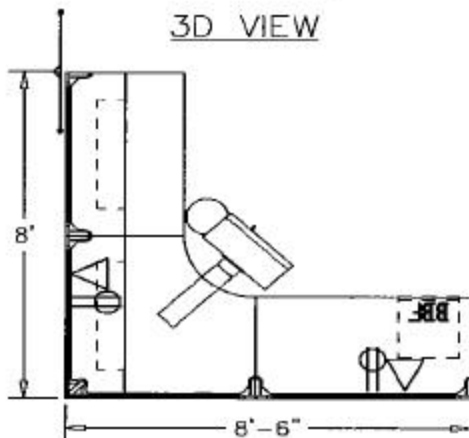
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 12A	
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PH200.1848L	+Screen,Stack,Bev R End for L Side of Corner	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1848S	+Screen,Stack,Straight End	2
PH200.1854S	+Screen,Stack,Straight End	1
PJ500.54	+Shelf,54In W	1
PJ510.47	+Shelf,Cnr,47In W	1
PA1LC.AE22P	+Cnr,30x48x48x30,Lam Top/Vin Ed,L & R Rec Leg,Pwr	1
PB1LC.DQ23P	+Rec,30x48,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DR32P	+Rec,30x54,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
M19P-1518G-BBF	+Ped,Mobile,Sipd Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #12B
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS

CIRCUIT LOCATIONS:

SP- SCIF 105A,

C4- CENTRAL CONTROL 119C

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 12B

03-26-03 REV. DATE

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BATTLE SIMULATION CENTER

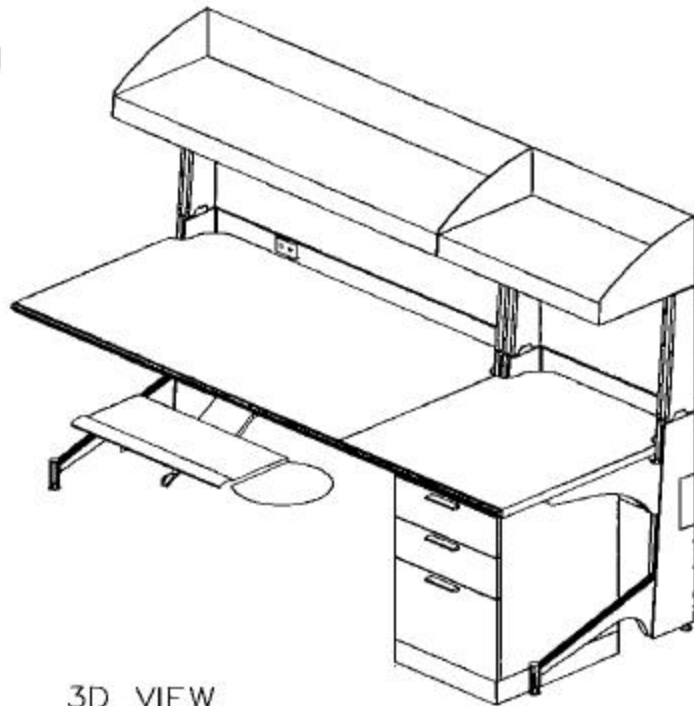
TYPICAL WORKSTATION COMPONENTS LIST

HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

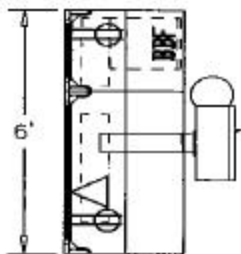
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 12B	
PG210.06	+Pwr Entry,Dir Conn 6Ft L	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PH200.1848L	+Screen,Stack,Bev R End for L Side of Corner	1
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1848S	+Screen,Stack,Straight End	2
PH200.1854S	+Screen,Stack,Straight End	1
PJ500.48	+Shelf,48In W	1
PJ510.47	+Shelf,Cnr,47In W	1
PA1LC.AE22P	+Cnr,30x48x48x30,Lam Top/Vin Ed,L & R Rec Leg,Pwr	1
PB1LC.DQ23P	+Rec,30x48,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DR23P	+Rec,30x54,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
M19P-1518G-BBF	+Ped,Mobile,Slpd Pull,B/B/F	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE
NTS

SYSTEMS FURNITURE TYPICAL #12C
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS

CIRCUIT LOCATIONS:

C4-- CENTRAL CONTROL 117A,
C9-- COMM. OFFICE 121A

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 12C

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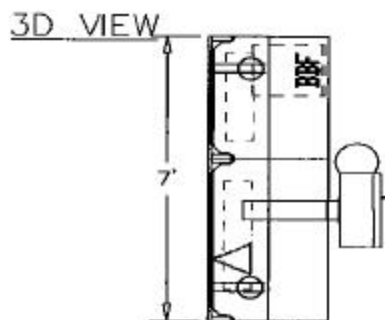
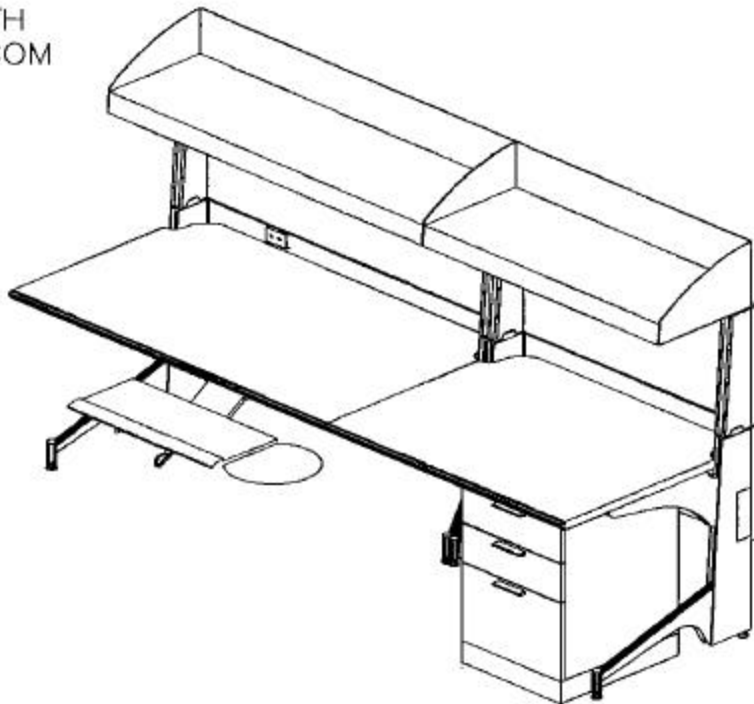
FORT LEWIS, WA
BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 12C	
PM130.24M	+Task Light,Basic,Can/NY,3500K	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PH200.1824S	+Screen,Stack,Straight End	1
PH200.1848S	+Screen,Stack,Straight End	1
PJ500.24	+Shelf,24In W	1
PJ500.48	+Shelf,48In W	1
PB1LC.DL23P	+Rec,30x24,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DQ32P	+Rec,30x48,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



SCALE
NTS

PLAN VIEW

SYSTEMS FURNITURE TYPICAL #12D
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS

CIRCUIT LOCATIONS:

SP- SCIF 105A,

C4- CENTRAL CONTROL 119C

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
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TYPICAL 12D

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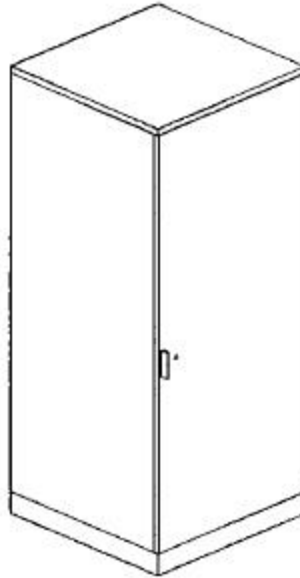
TYPICAL WORKSTATION COMPONENTS LIST

HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

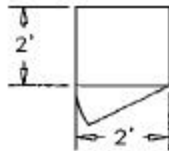
DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 12D	
PM130.30M	+Task Light,Basic,Can/NY,3500K	1
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	1
PH200.1836S	+Screen,Stack,Straight End	1
PH200.1848S	+Screen,Stack,Straight End	1
PJ500.36	+Shelf,36In W	1
PJ500.48	+Shelf,48In W	1
PB1LC.DN23P	+Rec,30x36,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DQ32P	+Rec,30x48,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	1
G7740.T	+Mouse Tray,Keybd Tray Att	1
G1314.	+Elec Dist,Work Surf-Attached	1
G1320	+Voice/Data Outlet,Work Surf-Attached	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW



PLAN VIEW

SCALE

NTS

SYSTEMS FURNITURE TYPICAL #12E

HERMAN MILLER "PASSAGE"

PAINTED METAL STORAGE

PAINTED METAL SHELVES

LOCATIONS:

SCIF 105A,

CENTRAL CONTROL 117A,

CENTRAL CONTROL 119C

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
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FT. LEWIS
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TYPICAL 12E

REV. DATE
03-26-03

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Fort Lewis, Washington

FY03 MCA PN 25057

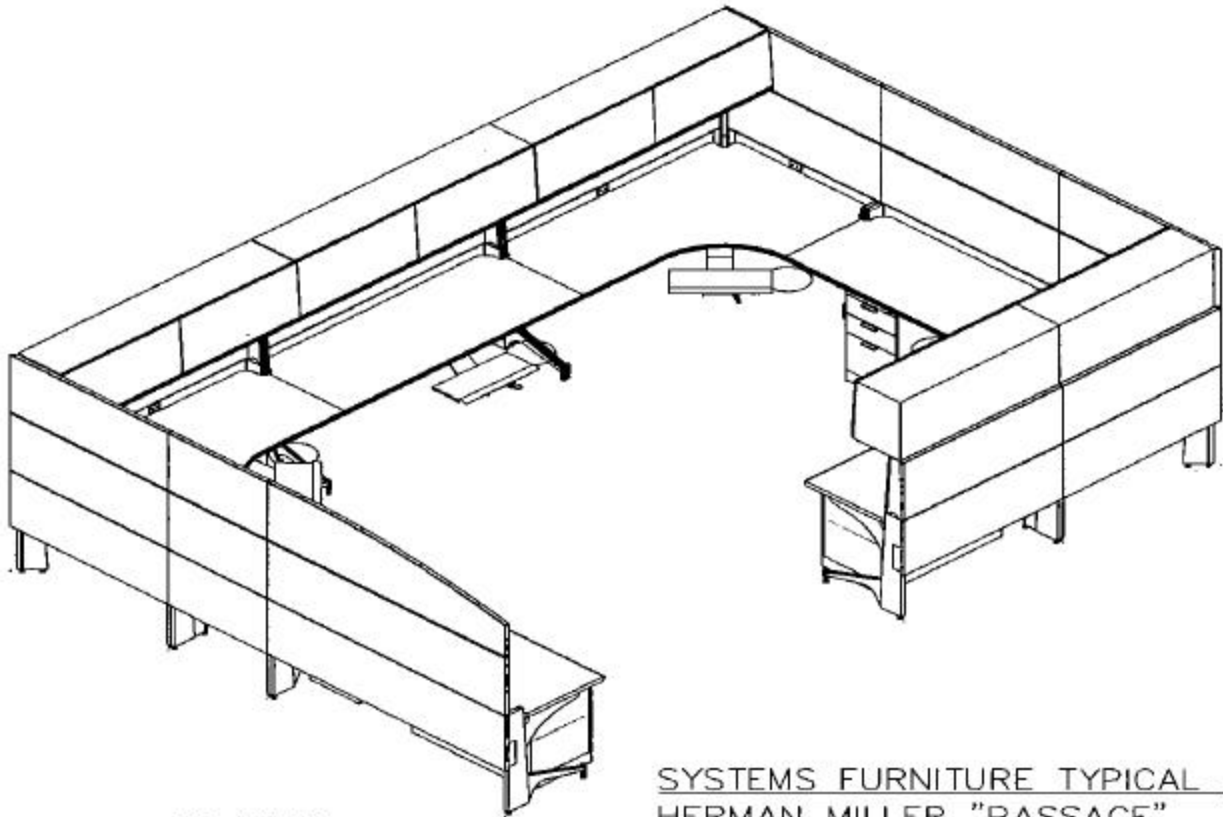
FORT LEWIS, WA
BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 12E	
49P-2424R-BX	@Twr,Stg,Slpd Pull,Hng-Wdrb R/4 Adj Sh	1

NOTE: COORDINATE WITH
ELECTRICAL AND TELECOM
DRAWINGS.



3D VIEW

SYSTEMS FURNITURE TYPICAL #13
HERMAN MILLER "PASSAGE"
SPECKLED LAMINATE WORKSURFACES
FABRIC TACK PANELS
PAINTED METAL STORAGE
PAINTED METAL COMPONENTS

LOCATIONS:
AAR OFFICE 108A

SCALE _____

NTS

PLANS ARE BASED ON CONSTRUCTION DOCUMENTS. BUSINESS INTERIORS
NORTHWEST WILL NOT BE RESPONSIBLE FOR DIMENSION VARIATIONS
OCCURRING AS THE RESULT OF ACTUAL CONSTRUCTION VARIANCES WHICH
MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 13 3D VIEW

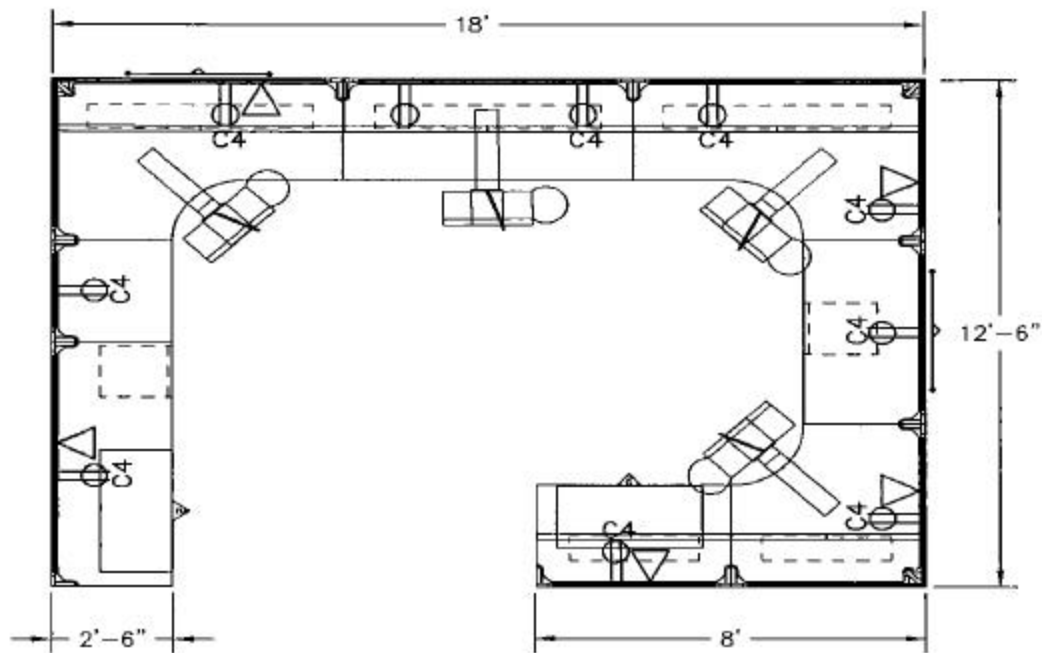
REV. DATE
03-26-03

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DRAWINGS.



PLAN VIEW

SCALE

NTS

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MAY AFFECT THE PLACEMENT OF FURNISHINGS AND EQUIPMENT.

FT. LEWIS
BATTLE SIMULATION CENTER

TYPICAL 13 PLAN VIEW

03-26-03 ^{REV. DATE}

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BATTLE SIMULATION CENTER

TYPICAL WORKSTATION COMPONENTS LIST
HERMAN MILLER
PASSAGE DESKING SYSTEM
GSA CONTRACT #GS-28F-8049H

DEALER: B.I.N.W.
10848 East Marginal Way S.
Seattle, WA 98168
(206) 441-6400

Part Number	Part Description	Qty
FT. LEWIS	BATTLE SIMULATION TYP 13	
PG210.06	+Pwr Entry,Dir Conn 6Ft L	2
PM130.36M	+Task Light,Basic,Can/NY,3500K	2
PM130.60M	+Task Light,Basic,Can/NY,3500K	3
K1311.A	+Receptacle,4 Cir,15 Amp,Duplex,Cir A	5
PJ101.48P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ101.72P	+Flipper Door Unit,Wt-Red,Paint Front	1
PJ111.47P	+Flipper Door Unit,Cnr,Wt-Red,,Paint Front	1
PJ111.71P	+Flipper Door Unit,Cnr,Wt-Red,,Paint Front	2
PA1LC.AE22P	+Cnr,30x48x48x30,Lam Top/Vin Ed,L & R Rec Leg,Pwr	1
PA2LC.AZ32P	+Cm,Ext,30x72x48x30,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PA2LC.BR22P	+Cm,Ext,30x48x72x30,Lam Top/Vin Ed,L Rec Leg/R Rec Leg,Pwr	1
PB1LC.DM32P	+Rec,30x30,Lam Top/Vin Ed,L C-Leg/R Rec Leg,Pwr	1
PB1LC.DQ23P	+Rec,30x48,Lam Top/Vin Ed,L Rec Leg/R C-Leg,Pwr	1
PB1LC.DR22P	+Rec,30x54,Lam Top/Vin Ed,L Rec Leg/R Rec Leg,Pwr	1
PB1LC.DU33P	+Rec,30x72,Lam Top/Vin Ed,L C-Leg/R C-Leg,Pwr	2
PH200.1830S	+Screen,Stack,Straight End	2
PH200.1848L	+Screen,Stack,Bev R End for L Side of Corner	4
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	2
PH200.1848R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1848S	+Screen,Stack,Straight End	1
PH200.1854S	+Screen,Stack,Straight End	2
PH200.1872L	+Screen,Stack,Bev R End for L Side of Corner	1
PH200.1872R	+Screen,Stack,Bev L End for R Side of Corner	1
PH200.1872S	+Screen,Stack,Straight End	2
PH210.72S	+Screen,Arc,10In H Lx18In H R,Straight End	1
M19P-1518G-BBF	+Ped,Mobile,Slpd Pull,B/B/F	2
29P-3618G-2N	+File,FS Lat Slpd Pull,2 Dwr	2
G7715.08P	+Keybd Tray,Fully Adj,Paddle Adj 21In Trk	4
G7740.T	+Mouse Tray,Keybd Tray Att	4
G1314.	+Elec Dist,Work Surf-Attached	5
G1320	+Voice/Data Outlet,Work Surf-Attached	4

-- End of Attachment --

NEMA WD 6 (1997) Wiring Devices - Dimensional Requirements

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1999) National Electrical Code

NFPA 101 (2000) Life Safety Code

NFPA 255 (2000) Method of Test of Surface Burning Characteristics of Building Materials

NFPA 265 (1998) Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

AQMD Rule 1168 (2002) Regulation XI, Rule 1168 Adhesive and Sealant Applications

UNDERWRITERS LABORATORIES (UL)

UL 723 (1996; Rev thru Dec 1998) Test for Surface Burning Characteristics of Building Materials

UL 1286 (1999) Office Furnishings

1.2 GENERAL

This specification establishes the minimum requirements for the acquisition and installation of a complete and usable system of workstations composed of stacking privacy screens, storage components, freestanding desk modules, supporting components, electrical hardware, communications, special electrical features, and accessories. Workstation requirements and configurations shall be in accordance with the furniture layout and typical workstation types shown in drawings and specified herein. Components and hardware shall be provided by a single manufacturer and shall be a standard product as shown in the most recent published price lists or amendments. Electrical components shall be products of a single manufacturer to the extent practicable (different types of components may be of different manufacturers, but all units of a given component shall be from a single source). The completed installation shall comply with NFPA 70 and NFPA 101. The Contractor shall coordinate the work of this section with that to be performed under other sections. This specification may include items which are not manufactured by the furniture manufacturer; any such items shall be furnished by the Contractor under this section.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Approved Detail Drawings; G, RO
Installation; G, RO

Drawings showing the proposed workstation installation at a scale of 1/4 inch = 1 foot (1:100), unless otherwise specified. Drawings showing communications, electronic data processing (EDP) and local area network (LAN) locations may be provided as a separate submittal from remaining workstation drawings. Drawing requirements, which are the furniture manufacturer's responsibility, shall be provided as a single submittal. Electronic drawings shall be provided to the user for future re-configuration in the software package requested by the user. The electronic drawings shall include all modifications made during installation.

a. Overall reference drawings: Drawings showing workstation locations and overall plan view within each floor. The scale shall be 1/8 inch = 1 foot (1:200) scale. Layouts shall reflect field verified conditions.

b. Installation drawings: Drawings showing workstations, panels, spine walls, components, and plan view within each floor. Workstations shall be identified by workstation type. Scale of drawings shall be identical to Architectural plans. Installation drawings shall reflect field verified conditions.

c. Workstation elevations: Dimensioned workstation elevations showing each type of workstation with panel frame configurations and all components identified with manufacturer's catalog numbers. Elevations shall be drawn at 1/2 inch = 1 foot (1:50) scale.

d. Layout drawings: Drawings showing workstation locations and critical dimensions from finished face of walls, columns, panels, including clearances and aisle widths. Typical workstations shall be keyed to a legend which shall include width, height, configuration, power or nonpower, connectors and wall mount hardware. Drawings shall reflect field verified conditions.

e. Electrical drawings: Drawings showing power provisions including type and location of feeder components (service entry poles, base or ceiling feeds), activated outlets and other electrical components. Wiring configuration (circuiting, switching, internal and external connections) shall be identified and a legend provided as applicable.

f. Wire management capacity drawings.

g. Communication drawings showing telephone provisions: Drawings indicating the type and location of feeder components and outlets with wiring configuration identified where applicable.

h. Communication drawings showing electronic data processing provisions: Drawings indicating the type and location of feeder components, outlets, or accessories with wiring configuration identified where applicable.

i. Communication drawings showing local area network provisions: Drawings indicating the type and location of feeder components and data outlets with extra ports for future expansion with wiring configuration identified where applicable.

j. Typical workstation drawings including isometric and plan views, components list, finishes, fabrics and keyed to overall plans.

SD-03 Product Data

Installation Instructions; G, RO

Manufacturer's product and construction specifications which provide technical data for furniture system and components specified, including task lighting and illumination performance information. Literature shall include adequate information to verify that the proposed product meets the specification.

Warranty; G, RO

Two copies of the warranty

Workstation Components; G, RO

Complete listing of part/model numbers for all components to be furnished, including names and codes of components referenced on updated drawings.

SD-04 Samples

Workstations; G, RO

Four sets of the following finish samples. The Government reserves the right to reject any finish samples that do not satisfy the construction or color requirements. The Contractor shall submit additional samples as required to obtain final approval. Work shall not proceed without sample approval in writing from the Contracting Officer.

a. Panel tackboard and flipper door fabric. Minimum 6 x 6 inches (150 x 150 mm) with label designating the manufacturer, color, fiber content, fabric weight, fire rating, and use for this project (panel and/or tackboard).

b. Panel, work surface, modesty panel, and component finish. Minimum 2 x 3 inches (51 x 76 mm) with label designating the manufacturer, material composition, thickness, color, finish and use for this project.

c. Task lights.

d. Veneer wood samples, minimum 2 x 3 inches (51 x 76 mm) with label designating manufacturer, species, veneer cut, thickness, color, finish and use for this project.

SD-06 Test Reports

Selected Components; G, RO
Panel Acoustics; G, RO
Fire Safety; G, RO
Electrical System; G, RO

One complete set of test reports for the proposed system.

SD-07 Certificates

Workstations; G, RO

Two complete sets of certificates attesting that the proposed workstation meets specified requirements. The certificate shall be dated after the award of contract, shall name the project, and shall list specific requirements being certified.

Wood and Wood Based Products; G

Certificate attesting that wood and wood-based products are from sustainable forests as certified by the Forest Stewardship Council (FSC 1.2 and FSC 5.3.3)

SD-10 Operation and Maintenance Data

Product Assembly Manual; G, RO

Three sets of assembly manuals describing assembly and reconfiguration procedures

Product Maintenance Manuals; G, RO
Cleaning; G, RO

Three sets of maintenance manuals describing proper cleaning and minor repair procedures

Electrical System; G, RO

Three sets of electrical system manuals describing the functions, configuration, and maintenance of the electrical system (power, communications, data). This material may be included in the above 2 manuals at the Contractor's option.

1.4 QUALIFICATIONS

The manufacturer shall be a company specializing in the production of prewired workstations for a minimum of 10 years and shall have a proven record of sustainable goals for manufacturing processes and use of sustainable materials in their products.

1.5 DELIVERY, STORAGE, AND HANDLING

Components shall be delivered to the jobsite in the manufacturer's original packaging with the brand, item identification, and project reference clearly marked thereon. Components shall be stored in a dry location that is adequately ventilated and free from dirt and dust, water, and other

contaminants, and in a manner that permits easy access for inspection and handling.

1.6 PATTERN AND COLOR

Pattern and color of finishes and fabrics for panels, work surfaces, components, and trim shall be in accordance with Section 09915 COLOR SCHEDULE.

1.7 ALTERNATE DESIGN

Manufacturers who are unable to provide workstations that conform exactly to the furniture layouts and typical workstation types shown in the contract drawings, may submit alternate designs for consideration by the Contracting Officer. Alternate designs must meet or exceed the following criteria. Alternate designs that are submitted but do not meet these criteria will be rejected.

1.7.1 Workstation Size and Configuration

The alternate design shall provide workstations and components of the same basic size and configuration shown, with only the sizes of the individual components within the workstation changed to meet the standard product of the manufacturer. Small variations of dimensions will be allowed which do not significantly affect the layout, shape or square footage of each workstation.

1.7.2 Component Requirements

The types of components or elements utilized shall be as shown on the drawings and as specified in PART 2 PRODUCTS of this specification.

1.7.3 Layout

The storage capacity, number of workstations accommodated, width of aisles, accessories or workstation configuration shall not be reduced.

1.7.4 Wiring Configuration

Alternate configurations must support the circuiting and connection capabilities identified under the provisions pertaining to power distribution of paragraph ELECTRICAL. Alternates may be acceptable which exceed the specified configuration in size or quantity.

1.8 WARRANTY

The Contractor shall warrant the furniture systems for a period of 12 years with the following exceptions: fabrics shall be warranted for 3 years. Electronic ballasts shall be warranted for 3 years. Warranties shall be signed by the authorized representative of the manufacturer. Warranties accompanied by document authenticating the signer as an authorized representative of the guarantor, shall be presented to the Contracting Officer upon the completion of the project. The Contractor shall guarantee that the workstation products and installation are free from any defects in material and workmanship from the date of delivery.

PART 2 PRODUCTS

2.1 PERFORMANCE AND SAFETY REQUIREMENTS

Recyclable materials shall conform to EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS. Panels, spine walls, frames and frame covers, connection system, work surfaces, pedestals, shelf units, flipper door units, lateral files, locks, accessories, and miscellaneous hardware shall meet testing as specified. ISO 9001 certified manufacturers may perform in-house testing. Manufacturers not ISO 9001 qualified shall be required to produce testing by an independent testing laboratory. Component specific requirements are listed in appropriate paragraphs.

2.1.1 Selected Components

Workstations shall conform to the requirements of BIFMA X5.5 and BIFMA X5.6 with the following exceptions: Panels, spine walls and panel, or spine wall supported components shall be tested and pass in accordance with the requirements of BIFMA X5.6 and representative items shall be selected for testing based on worst case situations (i.e., the deepest and widest work surface or shelf). The keyboard drawer or shelf test shall be performed applying a 50 lb (19 kg) load to the center of the keyboard shelf for a period of 5 minutes. Any loosening of attachments, permanent deflection or damage to the operation of the drawer or shelf will be cause for rejection.

2.1.2 Panel Acoustics

Acoustical panels shall have a minimum noise reduction coefficient (NRC) of 0.65 when tested in accordance with ASTM C 423 and a minimum sound transfer coefficient (STC) of 14 when tested in accordance with ASTM E 290. The test shall be conducted on the entire assembled panel, full face area (the complete core, adhesive, decorative fabric, frame and joining components).

2.1.3 Fire Safety

Components shall meet requirements for flame spread and smoke development as specified by NFPA 101 except as follows. Testing shall have been conducted in accordance with either ASTM E 84, UL 723, or NFPA 255 on the entire assembled panel and each different combination of fabric and interior construction. In addition, fabric shall meet the requirements of NFPA 265. Panel flame spread shall not exceed 25 for Class A and panel smoke development shall not exceed 450 for Class A, B and C.

2.1.4 General Safety

Workstation products shall be free of rough or sharp edges. Desk-based workstation components shall have the option for a positive, integral locking device that secures components to the base units.

2.1.5 Electrical System

Task lights shall be UL approved and shall meet the requirements of NFPA 70. The electrical system shall meet the requirements of UL 1286.

2.1.6 Wood Components

Wood veneers and solids shall be from sustainable forests as certified by the Forest Stewardship Council. Wood composite materials shall contain no urea formaldehyde.

2.1.7 Indoor Environmental Quality

All adhesives must meet or exceed the VOC limits of South Coast Air Quality Management District Rule AQMD #1168. All sealants used as a filler must meet or exceed California Air Resources Board AQMD 8-51. Paints and coatings must meet or exceed the VOC and chemical component limits of Green Seal.

2.2 DESK-BASED SYSTEMS

2.2.1 Desk-Based Systems

Accessories and appurtenances for a completely finished desk-based assembly shall be supplied complete with the system. The desk-based system shall be free-standing and independent of panel system support. It shall be capable of structurally supporting work surfaces, privacy screens, overhead storage, shelves, pedestals and other components in the configurations shown on the drawings. A fully constructed workstation can be moved nominal distances across the floor while intact. The system shall be available in a variety of nominal widths as defined on drawings. The back panel shall be open to 18" (45.72 cm) clear from the floor. All components shall be finished on all sides, including concealed and semi-concealed surfaces.

2.2.2 Finishes

a. The privacy screens shall be available in the following options: acoustical. Exposed panel trim shall have a factory baked enamel or powder coated finish. Each fabric-faced screen shall have a seamless width of fabric stretched over the entire face of the panel and the color of each fabric utilized shall be consistent throughout the installation. Curved panels may use adhesives on curved sections. The fabric shall be attached securely and continuously along the entire perimeter of the screen and shall allow for easy removal and replacement in the field. Fabric shall be factory installed.

2.2.3 Raceways

The cable management and electrical raceways shall be an integral part of the desk unit. The desk unit shall be available in a powered and a non-powered version. Raceways, whether powered or nonpowered, shall be provided with a raceway cover. Magnet held raceway covers will not be accepted.

2.2.4 Leveling Glides

The system shall provide precise alignment of adjacent and shall include leveling glides to compensate for uneven floors. Each supporting shall have 2 leveling glides. A minimum 3/4 inch (20 mm) adjustment range is required for all systems.

2.2.5 Wall Mounted Components

Wall-mount accessories shall be used when it is necessary to attach components or assemblies to the building walls.

2.3 WORK SURFACES AND FREESTANDING DESK UNITS

2.3.1 Free standing Desk Units

Freestanding desk units shall consist of two stanchions, two end supports, a back panel, two cable management raceways, an electrical raceway and a worksurface. The end support choices shall include the following options: a full-end panel, a C-leg or a recessed leg. The C-leg and recessed leg shall be of 12-gauge steel and the full-end panel shall consist of 22-gauge steel. The back panel option shall be constructed of 18-gauge steel. The cable management and electrical components shall be an integral part of the desk unit design, and engineered as a part of the furniture system. The desk unit shall be available in a powered and a non-powered version.

2.3.2 Work Surfaces

Work surfaces shall be constructed to prevent warpage. Work surfaces shall be fully floor-supported with legs, pedestals or furniture end panels as shown in the drawings. Abutting work surfaces shall mate closely and be at equal heights when used in side-by-side configurations in order to provide a continuous and level work surface. Work surfaces shall either have pre-drilled holes to accommodate storage components, pedestals and additional supports, or holes shall be able to be drilled at the job site to accommodate these items. Work surfaces shall be available in multiple shapes that include rectangular, curvilinear corners and curvilinear p- and d-shaped peninsulas. Work surfaces shall be provided in sizes, shapes and configurations shown on the drawings. Work surfaces shall be available in nominal depths of 24 inches (610 mm), and 30 inches (760 mm), nominal lengths from 24 to 72 inches (610 to 1830 mm), and a nominal thickness from 1 to 1-3/4 inches (25 to 45 mm). Work surfaces, legs or other components shall be height adjustable in 1 inch (25 mm) increments to achieve work surface height adjustability. The worksurfaces on a desk module shall be height adjustable in the field from 26 to 31 inches (66 to 79 cm) at one-inch (25 mm) increments. Work surfaces abutting at equal heights shall provide a continuous and level work surface. Corner work surfaces, peninsula work surfaces and counter/transaction work surfaces shall be provided as shown on the drawings and shall include hardware necessary to provide firm and rigid support.

2.3.3 Finishes

Metal components of freestanding desk modules shall have a factory baked enamel or powder coated finish. The work surfaces shall have a finished top surface of high pressure plastic laminate, or wood veneer and shall have a smoothly finished underside. The work surface shall not be affected by ordinary household solvents, acids, alcohols or salt solutions, and shall be capable of being cleaned with ordinary household cleaning solutions. Metal support brackets shall match the color and finish of trim. Edges shall be vinyl molding, solid wood or wood composite, as shown in drawings.

2.4 PEDESTAL AND LATERAL FILE CABINETS

The deepest possible file shall be provided for each work surface size specified. Pedestals shall be field interchangeable from left to right, and right to left, and shall retain the pedestal locking system capability. Pedestals shall be designed to protect wires from being damaged by drawer operation. File cabinets shall be work surface hung, or shall support work surfaces, or shall be free standing; as shown in drawings.

2.4.1 Construction

With the exception of drawer fronts, file cabinets and drawers shall be of steel construction. Drawer faces shall be securely attached to the drawer front.

2.4.2 Finishes

The finish of steel surfaces shall be a factory baked enamel finish or powder coated. Drawer fronts shall be either steel or veneer wood, as shown in drawings.

2.4.3 Drawer Requirements

Drawer configurations and height shall be as shown in drawings. Drawers shall stay securely closed when in the closed position and each drawer shall contain a safety catch to prevent accidental removal when fully open. File drawers shall have either a cradle type or full extension ball bearing suspension with hanging folder frames or compressor dividers. File drawers shall be minimum 12 inch (305 mm) high.

2.5 STORAGE

Flipper door cabinets, shelf units, tall cabinets and lateral files shall be provided in the sizes and configurations shown on the drawings. Flipper door and shelf unit cabinets shall accommodate task lighting and shall have a depth to accommodate a standard three ring binder. All storage units shall be able to be keyed-alike within the workstation.

2.5.1 Shelf Unit Construction

The shelf pan shall be of metal construction with formed edges. Shelf supporting end panels shall be constructed of metal. The vertical clearance under the flipper door unit or shelf shall be 20" (50.8 cm) when used with a 29" (73.66 cm)-high work surface. Overhead storage products shall be supported at each end by uprights that stack onto the leg stanchions of the desk module and are available in modular dimensions compatible with the desk modules.

2.5.2 Flipper Door Unit Construction

Flipper door unit shall be of equal construction to shelf units. Units shall remain securely fastened when in the locked position. Doors shall utilize a suspension system. The vertical clearance under the flipper door unit or shelf shall be 20" (50.8 cm) when used with a 29" (73.66 cm)-high work surface. Overhead storage products shall be supported at each end by uprights that stack onto the leg stanchions of the desk module and are available in modular dimensions compatible with the desk modules.

2.5.3 Lateral File and Tall Cabinet Unit Construction

Lateral files shall be of steel construction. File fronts, top and end panels shall be of equal construction to shelf units. File drawers shall have full extension ball bearing drawer slides or rack and pinion suspension. File drawers shall have hanging folder frames, compressor dividers or rails and shall be capable of hanging side-to-side or front-to-back.

2.5.4 Finish

Shelves and dividers and top dust cover shall have a factory baked enamel or powder coated finish. Shelf supporting end panels shall have either a factory baked enamel, powder coated or laminate finish. Shelf bottom shall match end panel color. Metal doors shall have an exterior finish of factory baked enamel, powder coated or a factory installed fabric covering and an interior finish of factory baked enamel or powder coated. Metal drawers shall have a factory baked enamel finish or powder coated. Flipper doors shall have a wood veneer surface or fabric covering. Lateral files, tall cabinets and pedestals shall have a factory baked enamel finish, powder coated finish or a wood veneer finish.

2.6 PRIVACY SCREENS

Desk-mounted screens shall be available in fabric rectangular and fabric arc surface materials. The fabric screen shall be tackable on both sides. Desk-mounted privacy screens shall be able to be stacked two-high and provide both seated-and standing-height privacy. When stacked two high atop a desk module, stackable screens shall be able to reach a total of 67" high. Fabric shall be factory installed. Location and size shall be as shown on drawings.

2.7 ACCESSORIES

2.7.1 Keyboard Tray

Work surfaces shall be capable of accepting an articulating keyboard on workstations as shown on the drawings. The keyboard tray shall have the capability to be fully recessed under the work surface and extend to give the user full access to the keyboard. Side travel rotation shall be a 180-degree swing. The keyboard tray shall have tilting capability and shall contain a wrist support. It should also include a mouse pad at the same level as the keyboard, and accommodate either right or left-handed users.

2.8 MISCELLANEOUS HARDWARE

Brackets, supports, hangers, clips, panel supported legs, connectors, adjustable feet, cover plates, stabilizers, and other miscellaneous hardware shall be provided.

2.9 LOCKS AND KEYING

Drawers, flipper door cabinets, tall cabinets and lateral files shall have keyed locks, unless otherwise noted. Field changeable lock cylinders shall be provided with a minimum of 100 different key options. Each workstation shall be individually keyed and locks within a workstation shall be keyed

alike. Drawers within a pedestal shall be lockable either by a central lock that controls all pedestals under one work surface or an individual keyed lock in each pedestal. Central file and storage units which are grouped together but are not a part of a workstation shall be keyed alike unless otherwise specified. Two keys shall be provided for each lock or 2 keys per workstation when keyed alike, and 3 master keys shall be provided per area. Keys and lock cylinders shall be numbered for ease of replacement. Locks shall be clearly labeled with a key number, except for those manufacturers who have removal format locks.

2.10 ELECTRICAL

Both powered and nonpowered units shall have raceways capable of distributing power circuits, communication cables and data lines. Nonpowered bases shall be capable of easy field conversion to powered base without requiring the unit to be dismantled or removed from the workstation. The system shall use copper cable assemblies, wiring harnesses or electrified bus and shall meet requirements of UL 1286 and NFPA 70, Article 605. Conductors shall consist of 20 amp, #12 AWG wires (unless indicated otherwise) or the equivalent in the bus configuration. The label or listing of Underwriter's Laboratories, Inc. will be accepted as evidence that the material or equipment conforms to the applicable standards of that agency. In lieu of this label or listing, a statement from a nationally recognized, adequately equipped testing agency shall be submitted indicating that the items have been tested in accordance with required procedures of UL and that the materials and equipment comply with contract requirements. Electrical work not addressed in this section shall conform to the requirements of Section 16415 ELECTRICAL WORK, INTERIOR.

2.10.1 Panel Raceways

Panels shall have hinged or removable covers that permit easy access to the raceway when required but are securely mounted and cannot be accidentally dislodged under normal conditions. Metal or plastic covers which attach securely to the raceway shall be provided as required and shall match the finish and color of the trim. Raceways shall have a minimum of 2 knockouts (doors) per side.

2.10.2 Power Distribution

Power distribution shall be provided as indicated on the drawings. The desk units shall have an internal power and separate internal communications raceway and the capability of disconnecting and connecting external circuits to the electrified raceway. The communications receiving raceway shall have capacity for at least twenty 4-pair category 5 cables. Power and communications wiring may share a common wireway if a metal divider is included to ensure electrical isolation. Doors or access openings shall be included for entry of communications cable. The electrified power raceway shall be of the 8-wire configuration indicated. Unless otherwise indicated, conductors of the 8-wire system shall be allocated as follows: the three-phase system shall have one shared ground, one isolated ground, and one dedicated neutral per phase.

2.10.2.1 Receptacles

Power receptacles shall be provided in the raceway as well as a minimum of two duplex receptacles above work surface. Devices shall be placed at the

locations indicated on the plans and shall be connected to the designated circuits. 15 amp (NEMA 5-15R) commercial grade conforming to NEMA WD 1 and NEMA WD 6. If receptacles are not interchangeable or will not permit field adjustment of phase and circuit selection, 10 percent spare devices of each type shown on these plans shall be furnished. General use receptacles shall be of the duplex configuration; unless otherwise indicated, special use receptacles shall be of the simplex configuration. The color of receptacle bodies shall match the color of the furniture trim. Field applied identification shall be permanent; stick-on or non-setting adhesives shall not be used. A minimum of 5 receptacle removal tools shall be provided for systems that require special tools for proper receptacle removal.

2.10.3 Electrical Connections

2.10.3.1 Internal Connections

Internal panel-to-panel power connections shall utilize straight or flexible plug/receptacle connector assemblies and shall be installed to provide the powered configurations shown on the drawings.

2.10.3.2 Connections to Building Services

External power services shall be supplied to the panels via hard wired entry junction box assemblies. Wiring from building services shall be extended to the entry modules or panel bases in metal conduit or flexible tubing 6 foot (1830 mm) maximum. Cord and plug assemblies shall not be used for any portion of external links. Base feed modules shall plug into the end or either side of the raceway at receptacle doors. External wiring shall conform to Section 16415 ELECTRICAL WORK, INTERIOR.

2.10.4 Wire Management

Wire management capability shall be provided at all workstations. Actual wire management capacity shall accommodate all cable types specified, including the applicable manufacturer required bending radius at corners. Raceways and interfaces to the raceways shall be designed to accommodate the bend radius as shown in EIA ANSI/TIA/EIA-569-A for Category 5 and fiber optic cables communication wiring whichever is greater. The capability may be accomplished by cable access cutouts (1 minimum per work surface), covered wire management troughs in vertical end panels, horizontal wiring troughs, internal midpanel (beltline) raceways, or rear gaps (between the back edge of the work surface and the facing support panel). Grommet kits or another suitable finish arrangement shall be provided for all cable cutouts. Accessories for an externally mounted vertical and horizontal wire management and concealment system shall be provided as recommended by the manufacturer. Horizontal wire managers shall be supplied for mounting under all work surfaces. The wire managers shall be attached either to the underside of the work surface or to the vertical panel without damaging the face. Exposed or loose wiring will not be acceptable. Wire managers shall be prefinished and shall secure, conceal, and accommodate outlet cords as well as electrical and communications wiring. Wire channels shall match color of trim, attach by means of clip-on attachment, and shall conceal wires routed vertically. Power wiring shall be separated from communication wiring by use of separate raceways or by placement of channels in joint use troughs or wireways.

2.10.5 Circuit Layout

The circuit layout for workstations shall be as shown on the drawings. Devices shall be connected to the designated circuits in the neutral and ground configurations indicated. Connections shall be made to the building electrical distribution system as shown on the contract drawings and in accordance with Section 16415 ELECTRICAL WORK, INTERIOR.

2.10.6 Task Lighting

Task light size and placement shall be provided as indicated on the contract drawings. Such lights shall be a standard component of the manufacturer's workstation products. The ends of the task light length shall not extend beyond the edges of the overhead unit. Task lights shall have structurally sound mounting devices which will prevent accidental displacement, but will allow easy removal and replacement when necessary. Fixtures shall be UL approved for use in the configurations indicated on the drawings.

2.10.6.1 Luminaire Configuration

Luminaires shall be the fluorescent type and shall have prismatic lenses, baffles, or reflector systems configured to minimize glare by shielding the lamp from the view of a seated user. Task lights for each workstation shall provide a minimum of 75 foot candles (810 lx) of light (horizontally measured), without veiling reflections, on the work surface directly below and a maximum of 20 inches (500 mm) from the fixture. All diffusers, grilles or other coverings shall be easily removable to permit cleaning and relamping. Fixtures shall be provided with energy efficient ballasts and lamps as indicated. Each luminaire shall have an easily accessible on-off switch and one rapid-start ballast. A variable intensity control is acceptable if the low setting is equivalent to "off" with zero energy consumption. Multiple switching is also acceptable. Ganged fixtures or shared ballasts shall not be used. Lamps and ballasts shall conform to the requirements of Section 16415 ELECTRICAL WORK, INTERIOR.

2.10.6.2 Wiring

Each fixture shall have a 6 foot (1830 mm) minimum, factory installed, heavy duty electrical cordset with a grounded plug. Direct or hard wire connections are not acceptable. Unless otherwise indicated, cords shall be concealed. Cord concealment shall be built-in within panels or shall utilize field installed, manufacturer approved accessories. Cords may be extended through dedicated channels located at any point within panels or may be placed in vertical slots or in the space between panels if held in place by retainers and concealed by a cover plate. Vertical wire managers shall be prefinished and cut to size and shall extend from the task light level down to the top of the work surface below the task light. Each manager shall be attached to a panel vertical edge or connector strip without damage to the surfaces.

2.10.7 Communications

Communications wiring shall be extended to, and installed in, the panels as shown on the plans. Communications outlets shall be installed at designated locations. Communications work may be performed in conjunction with the installation of workstations or may be separately executed at the Contractor's option; however, equipment, materials, and installation shall

conform to the requirements of Section 16415 ELECTRICAL WORK, INTERIOR and all interfaces must be properly coordinated.

PART 3 EXECUTION

3.1 INSTALLATION

The workstations shall be installed by certified installers in accordance with manufacturer's recommended installation instructions. Workstation components shall be installed level, plumb, square, and with proper alignment with adjoining furniture. The components shall be securely interconnected and securely attached to the building where required. Three sets of special tools and equipment necessary for the relocation of panels and other components shall be furnished.

3.2 CLEANING

Upon completion of installation, all products shall be cleaned and polished and the area shall be left in a clean and neat condition. Any defects in material and installation shall be repaired, and damaged products that cannot be satisfactorily repaired shall be replaced.

3.3 SEE FOLLOWING ATTACHMENT

End of Section

SECTION 15895

AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

ARI 410 (1991) Forced-Circulation Air-Cooling and Air-Heating Coils

ARI 430 (1999) Central-Station Air-Handling Units

ASTM INTERNATIONAL (ASTM)

ASTM A 53/A 53M (2001) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ASTM C 916 (1985; R 1996e1) Adhesives for Duct Thermal Insulation

ASTM C 1071 (2000) Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material)

ASTM E 84 (2001) Surface Burning Characteristics of Building Materials

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 52.1 (1992) Gravimetric and Dust-Spot Procedures for Testing Air-Cleaning Devices Used in General Ventilation for Removing Particulate Matter

ASHRAE 70 (1991) Method of Testing for Rating the Performance of Air Outlets and Inlets

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 90A (1999) Installation of Air Conditioning and Ventilating Systems

SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA HVAC Duct Const Stds (1995; Addenda Nov 1997; 6th Printing 2001) HVAC Duct Construction Standards - Metal and Flexible

SMACNA Install Fire Damp HVAC (1992; 2th Printing 1996) Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems

SMACNA Leakage Test Mnl (1985; 6th Printing 1997) HVAC Air Duct Leakage Test Manual

UNDERWRITERS LABORATORIES (UL)

UL 181 (1996; Rev thru Dec 1998) Factory-Made Air Ducts and Air Connectors

UL 214 (1997; Rev thru Aug 2001) Tests for Flame-Propagation of Fabrics and Films

UL 555 (1999; Rev thru Jan 2002) Fire Dampers

UL 723 (1996; Rev thru Sep 2001) Test for Surface Burning Characteristics of Building Materials

UL Bld Mat Dir (1999) Building Materials Directory

UL Elec Const Dir (2001) Electrical Construction Equipment Directory

UL Fire Resist Dir (2001) Fire Resistance Directory (2 Vol.)

1.2 COORDINATION OF TRADES

Ductwork, piping offsets, fittings, and accessories shall be furnished as required to provide a complete installation and to eliminate interference with other construction.

1.3 DELIVERY AND STORAGE

Equipment delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variations, dirt and dust, or other contaminants. Additionally, all pipes shall either be capped or plugged until installed.

1.4 FIELD MEASUREMENTS

After becoming familiar with all details of the work, the Contractor shall verify all dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing the work.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Drawings; G

Installation; G

Drawings showing equipment layout, including assembly and installation details and electrical connection diagrams; ductwork layout showing the location of all supports and hangers, typical hanger details, gauge reinforcement, reinforcement spacing rigidity classification, and static pressure and seal classifications; and piping layout showing the location of all guides and anchors, the load imposed on each support or anchor, and typical support details. Drawings shall include any information required to demonstrate that the system has been coordinated and will properly function as a unit and shall show equipment relationship to other parts of the work, including clearances required for operation and maintenance.

SD-03 Product Data

Components and Equipment; G

Manufacturer's catalog data included with the detail drawings for the following items. The data shall be highlighted to show model, size, options, etc., that are intended for consideration. Data shall be adequate to demonstrate compliance with contract requirements for the following:

- a. Piping Components
- b. Ductwork Components
- c. Air Systems Equipment
- d. Air Handling Units
- e. Terminal Units

Ductwork Leak Test Procedures; G

Pamper Acceptance Test

Proposed test procedures for ductwork leak test, and performance tests of systems, at least 2 weeks prior to the start of related testing.

Diagrams; G

Proposed diagrams, at least 2 weeks prior to start of related testing. System diagrams that show the layout of equipment, piping, and ductwork, and typed condensed operation manuals explaining preventative maintenance procedures, methods of checking the system for normal, safe operation, and procedures for safely starting and stopping the system shall be framed under glass or laminated plastic. After approval, these items shall be posted where directed.

Manufacturer's Experience; G

Statement demonstrating successful completion of similar services on at least 5 projects of similar size and scope, at least 2 weeks prior to submittal of other items required by this section.

Performance Tests; G

Proposed test schedules for hydrostatic test of piping, ductwork leak test, and performance tests, at least 2 weeks prior to the start of related testing.

Field Training; G

Proposed schedule for field training, at least 2 weeks prior to the start of related training.

SD-06 Test Reports

Performance Tests; G

Testing, Adjusting, and Balancing; G

Test reports for the piping hydrostatic test, ductwork leak test, and performance tests in booklet form, upon completion of testing. Reports shall document phases of tests performed including initial test summary, repairs/adjustments made, and final test results.

SD-10 Operation and Maintenance Data

Operating and Maintenance Instructions; G

Six manuals listing step-by-step procedures required for system startup, operation, shutdown, and routine maintenance, at least 2 weeks prior to field training. The manuals shall include the manufacturer's name, model number, parts list, list of parts and tools that should be kept in stock by the owner for routine maintenance including the name of a local supplier, simplified wiring and controls diagrams, troubleshooting guide, and recommended service organization (including address and telephone number) for each item of equipment. Each service organization submitted shall be capable of providing 4 hour onsite response to a service call on an emergency basis.

PART 2 PRODUCTS

2.1 STANDARD PRODUCTS

Components and equipment shall be standard products of a manufacturer regularly engaged in the manufacturing of products that are of a similar material, design and workmanship. The standard products shall have been in satisfactory commercial or industrial use for 2 years before bid opening. The 2-year manufacturer's experience shall include applications of components and equipment under similar circumstances and of similar size. The 2 years must be satisfactorily completed by a product which has been sold or is offered for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of

satisfactory field operation, for not less than 6000 hours exclusive of the manufacturer's factory tests, can be shown. The equipment items shall be supported by a service organization.

2.2 ASBESTOS PROHIBITION

Asbestos and asbestos-containing products shall not be used.

2.3 NAMEPLATES

Equipment shall have a nameplate installed by the manufacturer that identifies the manufacturer's name, address, type or style, model or serial number, and catalog number.

2.4 EQUIPMENT GUARDS AND ACCESS

Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts exposed to personnel contact shall be fully enclosed or guarded according to OSHA requirements. High temperature equipment and piping exposed to contact by personnel or where it creates a potential fire hazard shall be properly guarded or covered with insulation of a type specified.

2.5 DUCTWORK COMPONENTS

2.5.1 Metal Ductwork

All aspects of metal ductwork construction, including all fittings and components, shall comply with SMACNA HVAC Duct Const Stds unless otherwise specified. Under no conditions shall DUCTWORK thinner than 26 ga be allowed on this project. Elbows shall be radius type with a centerline radius of 1.5 times the width or diameter of the duct where space permits. Otherwise, elbows having a minimum radius equal to the width or diameter of the duct or square elbows with factory fabricated turning vanes may be used. All return, exhaust, and supply ductwork downstream of the VAV boxes shall be constructed to a pressure class of 2-inch w.g. (Class 500 pa) and shall meet the requirements of seal class C. All supply ductwork from the air handlers to the VAV terminal boxes shall be constructed to 6-inch w.g. (Class 1500) and shall meet the requirements of seal class A. Sealants shall conform to fire hazard classification specified in THERMAL INSULATION FOR MECHANICAL SYSTEMS and shall be suitable for the range of air distribution and ambient temperatures that it will be exposed to. Pressure sensitive tape shall not be used as a sealant. Spiral lock seam duct, and flat oval shall be made with duct sealant and locked with not less than 3 equally spaced drive screws or other approved methods indicated in SMACNA HVAC Duct Const Stds. The sealant shall be applied to the exposed male part of the fitting collar so that the sealer will be on the inside of the joint and fully protected by the metal of the duct fitting. One brush coat of the sealant shall be applied over the outside of the joint to at least 2 inch (50 mm) band width covering all screw heads and joint gap. Dents in the male portion of the slip fitting collar will not be acceptable. Outdoor air intake ducts and plenums shall be fabricated with watertight soldered or brazed joints and seams.

2.5.1.1 Transitions

Diverging air flow transitions shall be made with each side pitched out a maximum of 15 degrees, for an included angle of 30 degrees. Transitions for converging air flow shall be made with each side pitched in a maximum of 30 degrees, for an included angle of 60 degrees, or shall be as indicated. Factory-fabricated reducing fittings for systems using round duct sections when formed to the shape of the ASME short flow nozzle, need not comply with the maximum angles specified.

2.5.1.2 Insulated Nonmetallic Flexible Duct Runouts

Flexible duct runouts shall be used only where indicated. Runout length shall be as shown on the drawings, but shall in no case exceed 3 feet (1 m). Runouts shall be preinsulated, factory fabricated, and shall comply with NFPA 90A and UL 181. Either field or factory applied vapor barrier shall be provided. Where coil induction or high velocity units are supplied with vertical air inlets, a streamlined and vaned and mitered elbow transition piece shall be provided for connection to the flexible duct or hose. The last elbow to these units, other than the vertical air inlet type, shall be a die-stamped elbow and not a flexible connector. Insulated flexible connectors may be used as runouts. The insulated material and vapor barrier shall conform to the requirements of Section 15080 THERMAL INSULATION FOR MECHANICAL SYSTEMS. The insulation material surface shall not be exposed to the air stream.

2.5.1.3 General Service Duct Connectors

A flexible duct connector approximately 6 inches (150 mm) in width shall be provided where sheet metal connections are made to fans or where ducts of dissimilar metals are connected. For round/oval ducts, the flexible material shall be secured by stainless steel or zinc-coated, iron clinch-type draw bands. For rectangular ducts, the flexible material locked to metal collars shall be installed using normal duct construction methods. The composite connector system shall comply with UL 214 and be classified as "flame-retarded fabrics" in UL Bld Mat Dir.

2.5.1.4 High Temperature Service Duct Connections

Material shall be approximately 3/32 inch (2.38 mm) thick, 35 to 40-ounce per square yard (1.2 to 1.36 kg per square meter) weight, plain weave fibrous glass cloth with, nickel/chrome wire reinforcement for service in excess of 1200 degrees F (650 degrees C).

2.5.2 Ductwork Accessories

2.5.2.1 Duct Access Doors

Access doors shall be provided in ductwork and plenums where indicated and at all air flow measuring primaries, automatic dampers, fire dampers, coils, thermostats, and other apparatus requiring service and inspection in the duct system, and unless otherwise shown, shall conform to SMACNA HVAC Duct Const Stds. Access doors shall be provided upstream and downstream of air flow measuring primaries and heating and cooling coils. Doors shall be minimum 15 x 18 inches (375 x 450 mm), unless otherwise shown. Where duct size will not accommodate this size door, the doors shall be made as large as practicable. Doors 24 x 24 inches (600 x 600 mm) or larger shall be

provided with fasteners operable from both sides. Doors in insulated ducts shall be the insulated type.

2.5.2.2 Smoke/Fire Dampers

a. Ratings:

1. Fire Resistance: 1-1/2 hours in accordance with UL555.
2. Smoke Rating: Leakage Class I Smoke Damper in accordance with UL555S. A Class I smoke damper leaks no more than 8 cubic feet per minute (.23 m³/min) at 4 in. wg. (1 kPa) differential pressure. Damper shall be rated for vertical or horizontal applications.
3. Air Flow Rating: 2000 fpm/610 (M/min).

b. Construction:

1. Frame: 5 inches x minimum 16 gage (127 x minimum 1.6 mm) roll formed, galvanized steel hat-shaped channel, reinforced at corners. Structurally equivalent to 13 gage (2.3 mm) U-channel type frame.
2. Blades:
 - a) Style: True airfoil-shaped, single piece, double skin.
 - b) Action: Opposed.
 - c) Orientation: Horizontal.
 - d) Material: Minimum 14 gage (2.0 mm) equivalent thickness, galvanized steel.
 - e) Width: Maximum 6 inches (152 mm).
3. Bearings: Self-lubricating stainless steel sleeve, turning in extruded hole in frame.
4. Seals:
 - a) Blade: Inflatable silicone fiberglass material to maintain smoke leakage rating to a minimum of 450 degrees F (232 degrees C) and galvanized steel for flame seal to 1,900 degrees F (1,038 degrees C). Mechanically attached to blade edge (glue-on or grip type seals are not acceptable).
 - b) Jamb: Stainless steel, flexible metal compression type.
5. Linkage: Concealed in frame.
6. Axles: Minimum 1/2 inch (13) diameter plated steel, hex-shaped, mechanically attached to blade.
7. Temperature Release Device: Heat-Actuated, Quick Detect.
 - a) Close (in a controlled manner) and lock damper during test, smoke detection, power failure, or fire conditions through actuator

closure spring. At no time shall actuator disengage from damper blades.

b) Allow damper to be automatically and remotely reset after test or power failure conditions. After exposure to high temperature or fire, inspect damper before reset to ensure proper operation.

c) Controlled closing and locking of damper in 7 to 15 seconds to allow duct pressure to equalize. Instantaneous closure is not acceptable.

8. Release Temperature:

a) 165 degrees F (74 degrees C).

9. Actuator: Electric 120 V, 60 Hz, two-position, fail close. With external mounting.

10. Duct Transition Connection: Provide duct transition as required.

c. Accessories:

1. Duct Smoke Detector: Provide a factory mounted duct smoke detector completely wired into the damper assembly. The duct smoke detector shall be capable of detecting smoke in the ductwork from 0-2000 FPM. The detector shall utilize the Ionization method for smoke detection.

2. Mounting Angles: Provide factory fabricated mounting angles. The exact configuration is the contractor choice.

3. Factory Sleeve:

a) Minimum 16 gage (1.0 mm) thickness, minimum 17 inches (432 mm) long.

b) Silicone caulk factory applied to sleeve at damper frame to comply with leakage rating requirements.

d. Source Quality Controls:

a. Factory Tests: Factory cycle damper and actuator assembly to assure proper operation.

2.5.2.3 Fire Dampers

Fire dampers shall be 1-1/2 hour fire rated unless otherwise indicated. Fire dampers shall conform to the requirements of NFPA 90A and UL 555. Fire dampers shall be automatic operating type and shall have a dynamic rating suitable for the maximum air velocity and pressure differential to which it will be subjected. Fire dampers shall be approved for the specific application, and shall be installed according to their listing. Fire dampers shall be equipped with a steel sleeve or adequately sized frame installed in such a manner that disruption of the attached ductwork, if any, will not impair the operation of the damper. Sleeves or frames shall be equipped with perimeter mounting angles attached on both sides of the wall

or floor opening. Ductwork in fire-rated floor-ceiling or roof-ceiling assembly systems with air ducts that pierce the ceiling of the assemblies shall be constructed in conformance with UL Fire Resist Dir. Fire dampers shall be curtain type with damper blades out of the air stream. Dampers shall not reduce the duct or the air transfer opening cross-sectional area. Dampers shall be installed so that the centerline of the damper depth or thickness is located in the centerline of the wall, partition or floor slab depth or thickness. Unless otherwise indicated, the installation details given in SMACNA Install Fire Damp HVAC and in manufacturer's instructions for fire dampers shall be followed.

2.5.2.4 Splitters and Manual Balancing Dampers

Splitters and manual balancing dampers shall be furnished with accessible operating mechanisms. Where operators occur in finished portions of the building, operators shall be chromium plated with all exposed edges rounded. Splitters shall be operated by quadrant operators or 3/16 inch (5 mm) rod brought through the side of the duct with locking setscrew and bushing. Two rods are required on splitters over 8 inches (200 mm). Manual volume control dampers shall be operated by locking-type quadrant operators. Dampers and splitters shall be 2 gauges heavier than the duct in which installed. Unless otherwise indicated, multileaf dampers shall be opposed blade type with maximum blade width of 12 inches (300 mm). Access doors or panels shall be provided for all concealed damper operators and locking setscrews. Unless otherwise indicated, the locking-type quadrant operators for dampers, when installed on ducts to be thermally insulated, shall be provided with stand-off mounting brackets, bases, or adapters to provide clearance between the duct surface and the operator not less than the thickness of the insulation. Stand-off mounting items shall be integral with the operator or standard accessory of the damper manufacturer. Volume dampers shall be provided where indicated.

2.5.2.5 Air Deflectors and Branch Connections

Air deflectors shall be provided at duct mounted supply outlets, at takeoff or extension collars to supply outlets, at duct branch takeoff connections, and at 90 degree elbows, as well as at locations as indicated on the drawings or otherwise specified. Conical branch connections or 45 degree entry connections may be used in lieu of deflectors or extractors for branch connections. All air deflectors, except those installed in 90 degree elbows, shall be provided with an approved means of adjustment. Adjustment shall be made from easily accessible means inside the duct or from an adjustment with sturdy lock on the face of the duct. When installed on ducts to be thermally insulated, external adjustments shall be provided with stand-off mounting brackets, integral with the adjustment device, to provide clearance between the duct surface and the adjustment device not less than the thickness of the thermal insulation. Air deflectors shall be factory-fabricated units consisting of curved turning vanes or louver blades designed to provide uniform air distribution and change of direction with minimum turbulence or pressure loss. Air deflectors shall be factory or field assembled. Blade air deflectors, also called blade air extractors, shall be approved factory fabricated units consisting of equalizing grid and adjustable blade and lock. Adjustment shall be easily made from the face of the diffuser or by position adjustment and lock external to the duct. Stand-off brackets shall be provided on insulated ducts and are described herein. Fixed air deflectors, also called turning vanes, shall be provided in 90 degree elbows.

2.5.3 Duct Sleeves, Framed Prepared Openings, Closure Collars

2.5.3.1 Duct Sleeves

Duct sleeves shall be provided for round ducts 15 inches (375 mm) in diameter or less passing through floors, walls, ceilings, or roof, and installed during construction of the floor, wall, ceiling, or roof. Round ducts larger than 15 inches (375 mm) in diameter and square, rectangular, and oval ducts passing through floors, walls, ceilings, or roof shall be installed through framed prepared openings. The Contractor shall be responsible for the proper size and location of sleeves and prepared openings. Sleeves and framed openings are also required where grilles, registers, and diffusers are installed at the openings. Framed prepared openings shall be fabricated from 20 gauge (1.0 mm) galvanized steel, unless otherwise indicated. Where sleeves are installed in bearing walls or partitions, black steel pipe, ASTM A 53/A 53M, Schedule 20 shall be used. Sleeve shall provide 1 inch (25 mm) clearance between the duct and the sleeve or 1 inch (25 mm) clearance between the insulation and the sleeve for insulated ducts.

2.5.3.2 Framed Prepared Openings

Openings shall have 1 inch (25 mm) clearance between the duct and the opening or 1 inch (25 mm) clearance between the insulation and the opening for insulated ducts.

2.5.3.3 Closure Collars

Collars shall be fabricated of galvanized sheet metal not less than 4 inches (100 mm) wide, unless otherwise indicated, and shall be installed on exposed ducts on each side of walls or floors where sleeves or prepared openings are provided. Collars shall be installed tight against surfaces. Collars shall fit snugly around the duct or insulation. Sharp edges of the collar around insulated duct shall be ground smooth to preclude tearing or puncturing the insulation covering or vapor barrier. Collars for round ducts 15 inches (375 mm) in diameter or less shall be fabricated from 20 gauge (1.0 mm) galvanized steel. Collars for round ducts larger than 15 inches (375 mm) and square, and rectangular ducts shall be fabricated from 18 gauge (1.3 mm) galvanized steel. Collars shall be installed with fasteners on maximum 6 inch (150 mm) centers, except that not less than 4 fasteners shall be used.

2.5.4 Sound Attenuation Equipment

a. Acoustical Duct Liner:

Acoustical duct lining shall be fibrous glass designed exclusively for lining ductwork and shall conform to the requirements of ASTM C 1071, Type I and II. Liner composition may be uniform density, graduated density, or dual density, as standard with the manufacturer. Lining shall be coated, not less than 1 inch (25 mm) thick. Where acoustical duct liner is used, liner or combination of liner and insulation applied to the exterior of the ductwork shall be the thermal equivalent of the insulation specified in THERMAL INSULATION FOR MECHANICAL SYSTEMS. Duct sizes shown shall be increased to compensate for the thickness of the lining used. In lieu of sheet metal duct with field-applied acoustical lining, acoustically equivalent lengths of fibrous glass duct or factory fabricated double-walled

internally insulated duct with perforated liner may be provided. Net insertion loss value, static pressure drop, and air flow velocity capacity data shall be certified by a nationally recognized independent acoustical laboratory.

2.5.5 Diffusers, Registers, and Grilles

Units shall be factory-fabricated of steel, corrosion-resistant steel, or aluminum and shall distribute the specified quantity of air evenly over space intended without causing noticeable drafts, air movement faster than 50 fpm (0.25 m/s) in occupied zone, or dead spots anywhere in the conditioned area. Outlets for diffusion, spread, throw, and noise level shall be as required for specified performance. Performance shall be certified according to ASHRAE 70. Inlets and outlets shall be sound rated and certified according to ASHRAE 70. Sound power level shall be as indicated. Diffusers and registers shall be provided with volume damper with accessible operator, unless otherwise indicated; or if standard with the manufacturer, an automatically controlled device will be acceptable. Volume dampers shall be opposed blade type for all diffusers and registers, except linear slot diffusers. Linear slot diffusers shall be provided with round or elliptical balancing dampers. Where the inlet and outlet openings are located less than 7 feet (2 m) above the floor, they shall be protected by a grille or screen according to NFPA 90A.

2.5.5.1 Diffusers

Diffuser types shall be as indicated. Ceiling mounted units shall be furnished with anti-smudge devices, unless the diffuser unit minimizes ceiling smudging through design features. Diffusers shall be provided with air deflectors of the type indicated. Air handling troffers or combination light and ceiling diffusers shall conform to the requirements of UL Elec Const Dir for the interchangeable use as cooled or heated air supply diffusers or return air units. Ceiling mounted units shall be installed with rims tight against ceiling. Sponge rubber gaskets shall be provided between ceiling and surface mounted diffusers for air leakage control. Suitable trim shall be provided for flush mounted diffusers. Duct collar connecting the duct to diffuser shall be airtight and shall not interfere with volume controller. Return or exhaust units shall be similar to supply diffusers.

2.5.5.2 Registers and Grilles

Units shall be four-way directional-control type, except that return and exhaust registers may be fixed horizontal or vertical louver type similar in appearance to the supply register face. Registers shall be provided with sponge-rubber gasket between flanges and wall or ceiling. Wall supply registers shall be installed at least 6 inches (150 mm) below the ceiling unless otherwise indicated. Return and exhaust registers shall be located 6 inches (150 mm) above the floor unless otherwise indicated. Four-way directional control may be achieved by a grille face which can be rotated in 4 positions or by adjustment of horizontal and vertical vanes. Grilles shall be as specified for registers, without volume control damper.

2.5.6 Air Vents, Penthouses, and Goosenecks

Air vents, penthouses, and goosenecks shall be fabricated from galvanized steel sheets with galvanized structural shapes. Sheet metal thickness,

reinforcement, and fabrication shall conform to SMACNA HVAC Duct Const Stds. Louver blades shall be accurately fitted and secured to frames. Edges of louver blades shall be folded or beaded for rigidity and baffled to exclude driving rain. Air vents, penthouses, and goosenecks shall be provided with bird screen.

2.6 AIR SYSTEMS EQUIPMENT

2.6.1 Fans

2.6.1.1 Centrifugal Type Power Wall Ventilators

Fans shall be V-belt driven centrifugal type with backward inclined, non-overloading wheel. Motor housing shall be removable and weatherproof. Unit housing shall be designed for sealing to building surface and for discharge and condensate drippage away from building surface. Housing shall be constructed of heavy gauge aluminum. Unit shall be as scheduled with an airtight and liquid-tight metallic wall sleeve. Motor enclosure shall be dripproof type. Lubricated bearings shall be provided.

2.6.1.2 Centrifugal Type Power Roof Ventilators

Fans shall be spun aluminum V-belt driven with backward inclined, non-overloading wheel. Motor compartment housing shall be hinged or removable and weatherproof, constructed of heavy gauge aluminum. Fans shall be provided as scheduled. Motors enclosure shall be dripproof type. Lubricated bearings shall be provided.

2.6.2 Air Filters

2.6.2.1 Cartridge Type Filters

Filters shall be 2 inch (50mm) depth, sectional, replaceable dry media type of the size as required and shall have an average efficiency of 30 percent when tested according ASHRAE 52.1. Initial resistance shall not exceed .28 inches (7mm) at 500 FPM (2.54 /s) Filters shall be UL class 1. Media shall be pleated micro-glass paper media with corrugated aluminum separators, sealed inside the filter cell to form a totally rigid filter assembly. Fluctuations in filter face velocity or turbulent air flow will have no effect on filter integrity of performance.

Filters shall be 12 inch (305 mm) depth, sectional, replaceable dry media type of the size indicated and shall have an average efficiency of 80 to 85 percent when tested according to ASHRAE 52.1. Initial resistance at 500 feet per minute (2.54 m/s) shall not exceed 0.56 inches (14 mm), water gauge. Filters shall be UL class 1. Media shall be pleated microglass paper media with corrugated aluminum separators, sealed inside the filter cell to form a totally rigid filter assembly. Fluctuations in filter face velocity or turbulent airflow will have no effect on filter integrity or performance. Each filter shall be installed with an extended surface pleated media panel filter as a prefilter in a factory preassembled side access housing, or a factory-made sectional frame bank, as indicated.

2.6.2.2 Holding Frames

Frames shall be fabricated from not lighter than 16 gauge (1.6 mm) sheet steel with rust-inhibitor coating. Each holding frame shall be equipped

with suitable filter holding devices. Holding frame seats shall be gasketed. All joints shall be airtight. Frames to be constructed so air pressure assists in sealing filters to frames.

2.6.2.3 Filter Gauges

Filter gauges shall be dial type, diaphragm actuated draft and shall be provided for all filter stations, including those filters which are furnished as integral parts of factory fabricated air handling units. Gauges shall be at least 3-7/8 inches (98 mm) in diameter, shall have white dials with black figures, and shall be graduated in 0.01 inch (0.0025 kPa mm), and shall have a minimum range of 1 inch (0.25 kPa) beyond the specified final resistance for the filter bank on which each gauge is applied. Each gauge shall incorporate a screw operated zero adjustment and shall be furnished complete with two static pressure taps with integral compression fittings, two molded plastic vent valves, two 5 foot (1.5 m) minimum lengths of 1/4 inch (6.35 mm) diameter vinyl tubing, and all hardware and accessories for gauge mounting.

2.7 AIR HANDLING UNITS

2.7.1 Factory-Fabricated Air Handling Units

Units shall be variable air volume or constant volume as indicated in schedule, roof mounted, draw through, scheduled as indicated. Units shall include fans, coils, airtight insulated casing, prefilters, final filter sections, adjustable V-belt drives, mixing box vibration-isolators, and appurtenances required for specified operation. Vibration isolators shall be as indicated. Each air handling unit shall have physical dimensions suitable to fit space allotted to the unit and shall have the capacity indicated. Air handling unit shall have published ratings based on tests performed according to ARI 430. Unit shall come complete with all wiring suitable for single point electrical connection, including approved disconnects and breakers for ancillary loads.

2.7.1.1 Casings

Casing of each air handler shall have a complete stand alone welded steel tube frame with a welded steel channel base. Panels shall be 4-inch (100 mm) thick, insulated, double wall, steel panels, bolted and gasketed to the frame. Units shall be fabricated to allow removal of panels for access to internal parts and components, if necessary. Joints between sections shall be sealed air-tight, during assembly. Casing shall be rated for 8 inches (200 mm) water column differential pressure. Units shall be constructed with additional bracing and supports as required for the pressure rating, without sound or vibration problems. Casing sections shall be as indicated, galvanized steel, or 16 gauge (1.6 mm) steel outer casing protected with a factory baked enamel finish according to paragraph FACTORY PAINTING. Inner casing of double-wall units shall be minimum 18 gauge (1.0 mm) solid galvanized steel and perforated steel as scheduled. Casing shall be designed and constructed with an integral insulated structural steel frame such that exterior panels are non-load bearing. Casings shall be provided with inspection doors, access sections, and access doors as indicated. Inspection and access doors shall be insulated, fully gasketed, double-wall type, of a minimum 16 gauge (1.3 mm) outer and 18 gauge (1.0 mm) inner panels. Doors shall be rigid and provided with heavy duty hinges and latches. Access doors shall be minimum 24 inches (600 mm) wide and shall be

the full height of the unit casing or a minimum of 6 foot (1800 mm), whichever is less. A minimum 8 by 8 inches (200 by 200 mm) sealed glass. Access Sections shall be according to paragraph AIR HANDLING UNITS. Drain pan shall be double-wall insulated type constructed of 16 gauge (1.4 mm) stainless steel, double pitched to the drain connection. Drain pans shall be welded water tight, treated to prevent corrosion, and designed for positive condensate drainage. When 2 or more cooling coils are used, with one stacked above the other, condensate from the upper coils shall not flow across the face of lower coils. Intermediate drain pans or condensate collection channels and downspouts shall be provided, as required to carry condensate to the unit drain pan out of the air stream and without moisture carryover. Drain pan shall be constructed so that the pan may be visually inspected easily including underneath the coil without removal of the coil and so that the pan may be physically cleaned completely and easily underneath the coil without removal of the coil. Casing insulation shall conform to NFPA 90A Single-wall casing sections handling conditioned air shall be insulated with not less than 1 inch (25 mm) thick, 1-1/2 pound density (24 kg per cubic meter) coated fibrous glass material having a thermal conductivity not greater than 0.23 Btu/hr-sf-F (100 mm). Double-wall casing sections handling conditioned air shall be insulated with not less than 0.23 Btu/hr-sf-F (100 mm) of insulation. Foil-faced insulation shall not be an acceptable substitute for use with double wall casing. Double wall insulation must be completely sealed by inner and outer panels. Factory applied fibrous glass insulation shall conform to ASTM C 1071, except that the minimum thickness and density requirements do not apply, and shall meet the requirements of NFPA 90A. Air handling unit casing insulation shall be uniform over the entire casing. Duct liner material, coating, and adhesive shall conform to fire-hazard requirements specified in Section 15080 THERMAL INSULATION FOR MECHANICAL SYSTEMS. Exposed insulation edges and joints where insulation panels are butted together shall be protected with a metal nosing strip or shall be coated to conform to meet erosion resistance requirements of ASTM C 1071. A latched and hinged inspection door, shall be provided in the fan and coil sections. Additional inspection doors, access doors and access sections shall be provided where indicated.

Floor shall be insulated double wall galvanized steel, sloped to drain. Provide 10 ga aluminum tread plate floor material with ample cross members (maximum 18-inch (457 mm) spacing) to support foot traffic. Floor to be welded water tight. Provide for four 3/4 inch (18 mm) anchor bolts for seismic anchoring. Locate one bolt in each corner of the air handler.

Provide two spare 1 inch (25 mm) conduit running the full length interior of each side of the Air Handling unit with a 4-inch by 4-inch (100 mm by 100 mm) junction box in each section suitable for control wiring. Conduit and junction boxes shall be located so as not to interfere with the normal function of the Air Handling unit including the removal of heating and cooling coils. Provide a junction box at one end at the exterior of the Air Handling Unit that will allow wiring to pass to the spare conduit on the interior of the Air Handling Unit.

Provide weather proof lights located in each section of the Air Handling Unit. Lights shall be completely wired to a single light switch located on the exterior of the Air Handling Unit and terminated in a junction box. Provide at least one 120v service receipt.

2.7.1.2 Cooling Coils

Coils shall be constructed of not less than 5/8 inch (16 mm) outside diameter seamless copper tubing, with copper or aluminum fins mechanically bonded or soldered to the tubes. Coils shall be provided with not less than 5/8 inch (16 mm) outside diameter flare or sweat connectors, accessory piping package with thermal connections suitable for connection to the type of control valve supplied, and manual air vent. Coils shall be tested hydrostatically at 300 psi (2000 kPa) or under water at 250 psi (1700 kPa) air pressure and suitable for 200 psi (1400 kPa) working pressure. Provisions shall be made for coil removal.

2.7.1.3 Air Filters

Air filters shall be as specified in paragraph AIR SYSTEMS EQUIPMENT for types and thickness indicated.

2.7.1.4 Fans

- a. Testing Requirements: The following factory tests are required:
 - 1. General: Sound power level ratings shall comply with AMCA Standard 301 "Method for Calculating Fan Sound Ratings From Laboratory Test Data" and shall be the result of tests made in accordance with AMCA Standard 300 "Test Code for Sound Rating." Fans shall be licensed to bear the AMCA Certified Sound Ratings Seal.
 - 2. Unit's fans performance ratings for flow rate, pressure, power, air density, speed of rotation, and efficiency shall be factory tested and ratings established in accordance with AMCA Standard 210/ASHRAE Standard 51 - Laboratory Methods of Testing Fans for Rating.
- b. Fan Section Construction: Fan section shall be equipped with a welded steel channel base for integral mounting of fan, motor, and casing panels. The fan scroll, wheel, shaft, bearings, and motor shall be mounted on a structural steel frame with frame mounted on base with vibration isolators. Vibration springs shall have 2-inch (12-mm) deflection and seismic restraints.
- c. Supply air fans shall be belt drive plenum fans with airfoil wheel. Drive shall be rated for 150 percent of scheduled motor horsepower or two full motor sizes whichever is greater. Centrifugal fans shall be supplied as shown in the plans and in the fan schedule. Fan shall be rigidly braced and reinforced with integral spring isolation on fan base to help prevent vibrations or pulsation. Wheel diameter and outlet areas shall be in accordance with the Airfoil standard sizes adopted by AMCA for non-overloading fans. Airfoil blades shall be continuously welded to both rim and backplate and shall be capable of Class III duty. The wheel inlet and fan inlet cone shall be fabricated of aluminum and carefully matched for optimal sound and air performance. Turned, ground and polished steel shafts shall be sized so the final critical speed is at least 25 percent over the maximum speed for each pressure class.
- d. Shaft Bearings: Grease-lubricated ball bearings selected for 200,000 hours average life, with grease fittings extended to an accessible location outside the fan section. Provide permanent drive shaft

grounding to prevent electrical currents eroding the bearings and drive shaft of fans.

- e. Provide airflow traverse probes mounted in the fan inlets capable of continuously measuring the air handling capacity (air volume) of the fan. The fan inlet airflow traverse probes shall contain multiple total and static pressure sensors placed at concentric area centers along the exterior surface of the cylindrical probes and internally connected to their respective averaging manifolds. Sensors shall not protrude beyond the surface of the probe, nor be adversely affected by particle contamination normally present in building system airflows. The fan inlet airflow traverse probes shall be symmetrical averaging signal takeoffs, and shall be of aluminum construction with hard anodized finish with galvanized steel mounting hardware. The probes shall be capable of producing steady, non-pulsating signals of standard total and static pressure, without need for flow corrections or factors, with an accuracy of 3 percent of actual flow over a fan operating range of 6 to 1 capacity turndown. Provide a multi-line digital display transmitter suitable for use with the air flow monitoring system. Transmitter shall be capable of displaying the actual CFM, static and velocity pressure for the system. Transmitter shall be capable of providing a calibrated output signal of 0-10 VDC or 4-20maDC. Transmitter shall be factory mounted on the outside of the AHU. Coordinate the installation with the Owner.
- f. Fan Discharge Safety Enclosure: The safety enclosure to be expanded metal screen with a heavy steel frame which completely encloses the fan wheel. The top portion of the enclosure is removable to allow access to and removal of the wheel. Cataloged performance is based on fan without safety screen enclosure.

2.7.1.5 Access Sections and Filter/Mixing Boxes

Access sections shall be provided where indicated and shall be furnished with access doors as shown. Access sections and filter/mixing boxes shall be constructed in a manner identical to the remainder of the unit casing and shall be equipped with access doors.

2.7.1.6 Dampers

General: Leakage rate when tested in accordance with AMCA Standard 500 - Test Method for Louvers, Dampers and Shutters, shall not exceed 2 percent of air quantity calculated at 2,000 fpm face velocity through damper and 4 inches (100 mm) w.g. pressure differential.

- a. Damper operators shall be electrically operated.

2.7.1.7 Dampers

Dampers shall be as specified in paragraph CONTROLS.

2.7.1.8 Variable Frequency Drives

Variable frequency drives shall be as specified in Section 15910, DIRECT DIGITAL CONTROL SYSTEMS.

2.7.1.9 Extra Materials and Work

- a. Provide Two (2) complete spare sets of belts for each air handler in addition to the belts on furnished with each fan.
- b. Provide Three (3) complete sets of filters for each air handler. Do not run the air handlers during the construction phase of the project without pre-filter and final filters in place. If the air handlers are operated during the construction phase of the project the contractor shall furnish the filters. The three (3) filters sets are intended to be used as follows:
 1. During the final phase of construction for system check out and balancing and prior to occupancy.
 2. The filters shall be changed prior to an owner directed two (2) week flush of the system immediately prior to occupancy. The contractor shall perform a flush of the building using 100% outside air for a period of not less than 14 days. During that time all of the VAV boxes shall be at a minimum of 50% open. This shall be coordinated with the owner to minimize energy usage during that time as well as avoid the possibility of freezing or overheating any systems that may be online in the building at that time.
 - ~~2. 3.~~ The final set of filters shall be spares turned over to the owner at the beginning of occupancy.

2.7.2 Air Handler Heat Recovery

All of the air handlers to include:

1. Provide an energy recovery coil in the exhaust/relief section of the air handler and in the outside air section of the air handler.
2. Provide 2" 30% filters upstream of each coil.
3. Interconnecting piping shall utilize a 35% propylene glycol solution similar to chilled water loop.
4. All piping shall be sized for a maximum of 3 feet/100 of pressure loss or 6 FPS which ever is less.
5. Provide an expansion tank suitably size for the system.
6. Pump shall be a single inline pump with a premium efficiency TEFC motor. All motors above 1/2 hp shall be 460/3, 1/2 hp and smaller shall be 110/1.
7. All wiring for the pump and controls shall be included as part of the single point electrical connection of the air handler.
8. Provide 100% bypass dampers around each of the coils so that during appropriate economizer functions that air is not required to pass through the coils.
9. Overall efficiency of the system shall be a minimum of 50%.

10. All piping shall be Type L copper with soldered joints.
11. Arrange all piping so that unit is serviceable.
12. Provide insulation on piping as appropriate with an aluminum jacket.

The control system shall monitor/control the following points:

1. Pump enable/disable.
2. Current transmitter switch on single leg of voltage.
3. Modulating 3-way valve to optimize energy use/consumption of the system.
4. Leaving water temperature sensor from both coils.
5. Control of all damper sections.
6. Controls shall sequence dampers, 3-way valve and pump to optimize heat recovery.

2.8 TERMINAL UNITS

2.8.1 Variable Air Volume (VAV) and Dual Duct Terminal Units

2.8.1.1 Variable Volume, Single Duct

Variable volume, single duct, terminal units shall be provided with a calibrated air volume sensing device, air valve or damper, actuator, and accessory relays. Units shall control air volume to within plus or minus 5 percent of each air set point volume as determined by the thermostat with variations in inlet pressures from 3/4 to 6 inch water gauge (200 to 1500 Pa). Internal resistance of units shall not exceed 0.4 inch water gauge (100 Pa) at maximum flow range. External differential pressure taps separate from the control pressure taps shall be provided for air flow measurement with a 0 to 1 inch water gauge (0 to 250 Pa) range. Unit volume controller shall be normally open upon loss of electrical power.

2.8.1.2 Variable Volume, Single Duct, Fan-Powered

Variable volume, single duct, fan-powered terminal units shall be provided with a calibrated air volume sensing device, air valve or damper, actuator, fan and motor, and accessory relays. Units shall control primary air volume to within plus or minus 5 percent of each air set point as determined by the thermostat with variations in inlet pressure from 3/4 to 6 inch water gauge (200 to 1500 Pa). Unit fan shall be centrifugal, direct-driven, double-inlet type with forward curved blades. Fan motor shall be either single speed with speed controller or three-speed, permanently lubricated, permanent split-capacitor type. Fan/motor assembly shall be isolated from the casing to minimize vibration transmission. Fan control shall be factory furnished and wired into the unit control system. A factory-mounted pressure switch shall be furnished to operate the unit fan whenever pressure exists at the unit primary air inlet or when the control system fan operates. Fan wheels shall be furnished with an anti-rotation device to prevent backwards rotation of fan due to primary air flow.

2.8.1.3 Reheat Units

- a. Hot Water Coils: Hot-water coils shall be fin-and-tube type constructed of seamless copper tubes and copper or aluminum fins mechanically bonded or soldered to the tubes. Where required, coils shall be minimum of 2 rows. Headers shall be constructed of cast iron, welded steel or copper. Casing and tube support sheets shall be 16 gauge (1.6 mm), galvanized steel, formed to provide structural strength. Tubes shall be correctly circuited for proper water velocity without excessive pressure drop and they shall be drainable where required or indicated. At the factory, each coil shall be tested at not less than 250 psi (1700 kPa) air pressure and shall be suitable for 200 psi (1400 kPa) working pressure. Drainable coils shall be installed in the air handling units with a pitch of not less than 1/8 inch per foot (10 mm per m) of tube length toward the drain end. Coils shall conform to the provisions of ARI 410.

PART 3 EXECUTION

3.1 INSTALLATION

Work shall be installed as shown and according to the manufacturer's diagrams and recommendations.

3.1.1 Equipment and Installation

Frames and supports shall be provided for pumps, air handling units, fans, coils, dampers, and other similar items requiring supports. Air handling units shall be floor mounted or ceiling hung, as indicated. The method of anchoring and fastening shall be as detailed. Floor-mounted equipment, unless otherwise indicated, shall be set on not less than 6 inch (150 mm) concrete pads or curbs doweled in place. Concrete foundations for circulating pumps shall be heavy enough to minimize the intensity of the vibrations transmitted to the piping and the surrounding structure, as recommended in writing by the pump manufacturer. In lieu of a concrete pad foundation, a concrete pedestal block with isolators placed between the pedestal block and the floor may be provided. The concrete foundation or concrete pedestal block shall be of a mass not less than three times the weight of the components to be supported. Lines connected to the pump mounted on pedestal blocks shall be provided with flexible connectors. Foundation drawings, bolt-setting information, and foundation bolts shall be furnished prior to concrete foundation construction for all equipment indicated or required to have concrete foundations.

3.1.2 Access Panels

Access panels shall be provided for concealed valves, vents, controls, dampers, and items requiring inspection or maintenance. Access panels shall be of sufficient size and located so that the concealed items may be serviced and maintained or completely removed and replaced. Access panels shall be as specified in Section 05500 MISCELLANEOUS METALS.

3.1.3 Flexible Connectors

Pre-insulated flexible connectors and flexible duct shall be attached to other components in accordance with the latest printed instructions of the

manufacturer to ensure a vapor tight joint. Hangers, when required to suspend the connectors, shall be of the type recommended by the connector or duct manufacturer and shall be provided at the intervals recommended.

3.1.4 Sleeved and Framed Openings

Space between the sleeved or framed opening and the duct or the duct insulation shall be packed as specified in Section 07840 FIRESTOPPING for fire rated penetrations. For non-fire rated penetrations, the space shall be packed as specified in Section 07900 JOINT SEALING.

3.1.5 Metal Ductwork

Installation shall be according to SMACNA HVAC Duct Const Stds unless otherwise indicated. Duct supports for sheet metal ductwork shall be according to SMACNA HVAC Duct Const Stds, unless otherwise specified. Friction beam clamps indicated in SMACNA HVAC Duct Const Stds shall not be used. Risers on high velocity ducts shall be anchored in the center of the vertical run to allow ends of riser to move due to thermal expansion. Supports on the risers shall allow free vertical movement of the duct. Supports shall be attached only to structural framing members and concrete slabs. Supports shall not be anchored to metal decking unless a means is provided and approved for preventing the anchor from puncturing the metal decking. Where supports are required between structural framing members, suitable intermediate metal framing shall be provided. Where C-clamps are used, retainer clips shall be provided.

3.1.6 Exposed Ductwork

Exposed ductwork shall be fabricated from minimum 18 gauge (1.3 mm), Type 304L or 316L, stainless steel with continuously welded joints and seams. Ducts shall be pitched to drain at hoods and low points indicated. Surface finish shall match hoods.

3.1.7 Acoustical Duct Lining

Lining shall be applied in cut-to-size pieces attached to the interior of the duct with nonflammable fire resistant adhesive conforming to ASTM C 916, Type I, NFPA 90A, UL 723, and ASTM E 84. Top and bottom pieces shall lap the side pieces and shall be secured with welded pins, adhered clips of metal, nylon, or high impact plastic, and speed washers or welding cup-head pins installed according to SMACNA HVAC Duct Const Stds. Welded pins, cup-head pins, or adhered clips shall not distort the duct, burn through, nor mar the finish or the surface of the duct. Pins and washers shall be flush with the surfaces of the duct liner and all breaks and punctures of the duct liner coating shall be sealed with the nonflammable, fire resistant adhesive. Exposed edges of the liner at the duct ends and at other joints where the lining will be subject to erosion shall be coated with a heavy brush coat of the nonflammable, fire resistant adhesive, to prevent delamination of glass fibers. Duct liner may be applied to flat sheet metal prior to forming duct through the sheet metal brake. Lining at the top and bottom surfaces of the duct shall be additionally secured by welded pins or adhered clips as specified for cut-to-size pieces. Other methods indicated in SMACNA HVAC Duct Const Stds to obtain proper installation of duct liners in sheet metal ducts, including adhesives and fasteners, will be acceptable.

3.1.8 Dust Control

To prevent the accumulation of dust, debris and foreign material during construction, temporary dust control protection shall be provided. The distribution system (supply and return) shall be protected with temporary seal-offs at all inlets and outlets at the end of each day's work. Temporary protection shall remain in place until system is ready for startup.

3.1.9 Insulation

Thickness and application of insulation materials for ductwork, piping, and equipment shall be according to THERMAL INSULATION FOR MECHANICAL SYSTEMS.

3.1.10 Duct Test Holes

Holes with closures or threaded holes with plugs shall be provided in ducts and plenums as indicated or where necessary for the use of pitot tube in balancing the air system. Extensions, complete with cap or plug, shall be provided where the ducts are insulated.

3.1.11 Power Roof Ventilator Mounting

Foamed 1/2 inch (13 mm) thick, closed-cell, flexible elastomer insulation shall cover width of roof curb mounting flange. Where wood nailers are used, holes shall be pre-drilled for fasteners.

3.1.12 Power Transmission Components Adjustment

V-belts and sheaves shall be tested for proper alignment and tension prior to operation and after 72 hours of operation at final speed. Belts on drive side shall be uniformly loaded, not bouncing. Alignment of direct driven couplings shall be to within 50 percent of manufacturer's maximum allowable range of misalignment.

3.1.13 Smoke-Fire and Fire Damper Installation

- a. Install dampers at locations indicated on the Drawings and in accordance with manufacturer's UL approved installation instructions.
- b. Install dampers square and free from racking with blades running horizontally.
- c. Do not compress or stretch damper frame into duct or opening.
- d. Handle damper using sleeve or frame. Do not lift damper using blades, actuator, or jackshaft.
- e. Install bracing for multiple section assemblies to support assembly weight and to hold against system pressure. Install bracing as needed.

3.2 DUCTWORK LEAK TEST

Ductwork leak test shall be performed for the entire air distribution and exhaust system, including fans, coils. Test procedure, apparatus, and report shall conform to SMACNA Leakage Test Mnl. The maximum allowable

leakage rate is 2 percent. Ductwork leak test shall be completed with satisfactory results prior to applying insulation to ductwork exterior.

3.3 DAMPER ACCEPTANCE TEST

All fire dampers and smoke dampers shall be operated under normal operating conditions, prior to the occupancy of a building to determine that they function properly. Fire dampers equipped with fusible links shall be tested by having the fusible link cut in place. Dynamic fire dampers shall be tested with the air handling and distribution system running. All fire dampers shall be reset with the fusible links replaced after acceptance testing. To ensure optimum operation and performance, the damper must be installed so it is square and free from racking.

3.4 TESTING, ADJUSTING, AND BALANCING

Testing, adjusting, and balancing shall be as specified in Section 15990 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS. Testing, adjusting, and balancing shall begin only when the air supply and distribution, including controls, has been completed, with the exception of performance tests.

3.5 PERFORMANCE TESTS

After testing, adjusting, and balancing has been completed as specified, each system shall be tested as a whole to see that all items perform as integral parts of the system and temperatures and conditions are evenly controlled throughout the building. Corrections and adjustments shall be made as necessary to produce the conditions indicated or specified. Capacity tests and general operating tests shall be conducted by an experienced engineer. Tests shall cover a period of not less than 3 days for each system and shall demonstrate that the entire system is functioning according to the specifications. Coincidental chart recordings shall be made at points indicated on the drawings for the duration of the time period and shall record the temperature at space thermostats or space sensors, the humidity at space humidistats or space sensors and the ambient temperature and humidity in a shaded and weather protected area.

3.6 CLEANING AND ADJUSTING

Pipes shall be cleaned free of scale and thoroughly flushed of foreign matter. A temporary bypass shall be provided for water coils to prevent flushing water from passing through coils. Strainers and valves shall be thoroughly cleaned. Prior to testing and balancing, air shall be removed from water systems by operating the air vents. Temporary measures, such as piping the overflow from vents to a collecting vessel shall be taken to avoid water damage during the venting process. Air vents shall be plugged or capped after the system has been vented. Inside of air terminal units, ducts, plenums, and casing shall be thoroughly cleaned of debris and blown free of small particles of rubbish and dust and then shall be vacuum cleaned before installing outlet faces. Equipment shall be wiped clean, with traces of oil, dust, dirt, or paint spots removed. Temporary filters shall be provided prior to startup of all fans that are operated during construction, and new filters shall be installed after all construction dirt has been removed from the building, and the ducts, plenums, casings, and other items specified have been vacuum cleaned. System shall be maintained in this clean condition until final acceptance. Bearings shall be properly lubricated with oil or grease as recommended by the manufacturer. Belts

shall be tightened to proper tension. Control valves and other miscellaneous equipment requiring adjustment shall be adjusted to setting indicated or directed. Fans shall be adjusted to the speed indicated by the manufacturer to meet specified conditions.

3.7 FIELD TRAINING

The Contractor shall conduct a training course for operating and maintenance personnel as designated by the Contracting Officer. Training shall be provided for a period of 24 hours of normal working time and shall start after the system is functionally complete but prior to the performance tests. The field instruction shall cover all of the items contained in the approved Operating and Maintenance Instructions.

End of Section

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SECTION 16264

DIESEL-GENERATOR SET, STATIONARY 15-300 KW, STANDBY APPLICATIONS

PART 1 GENERAL

1.1 BID FORM INFORMATION

The hardware and work of this Section shall be supplied under Option ~~0013~~0010.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- | | |
|-------------|--|
| ANSI C12.11 | (1987; R 1993) Instrument Transformers for Revenue Metering, 10 kV BIL through 350 kV BIL (0.6 kV NSV through 69 kV NSV) |
| ANSI C39.1 | (1981; R 1992) Requirements for Electrical Analog Indicating Instruments |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
|-------------------|--|
| ASTM A 53/A 53M | (1999b) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless |
| ASTM A 106 | (1999e1) Seamless Carbon Steel Pipe for High-Temperature Service |
| ASTM A 135 | (1997c) Electric-Resistance-Welded Steel Pipe |
| ASTM A 181/A 181M | (2000) Carbon Steel Forgings for General-Purpose Piping |
| ASTM A 234/A 234M | (2000) Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service |
| ASTM D 975 | (1998b) Diesel Fuel Oils |

ASME INTERNATIONAL (ASME)

- | | |
|-------------|--|
| ASME B16.3 | (1998) Malleable Iron Threaded Fittings |
| ASME B16.5 | (1996; B16.5a) Pipe Flanges and Flanged Fittings NPS 1/2 thru NPS 24 |
| ASME B16.11 | (1996) Forged Fittings, Socket-Welding and Threaded |

03015/AE/11
Battle Simulation Center, Ft. Lewis, Wa.

ASME B31.1 (1998) Power Piping

ASME BPVC SEC IX (1998) Boiler and Pressure Vessel Code;
Section IX, Welding and Brazing
Qualifications

ASSOCIATION OF EDISON ILLUMINATING COMPANIES (AEIC)

AEIC CS5 (1994; CS5a-1995) Cross-Linked Polyethylene
Insulated Shielded Power Cables Rated 5
Through 46 kV

AEIC CS6 (1996) Ethylene Propylene Rubber Insulated
Shielded Power Cables Rated 5 Through 69 kV

ELECTRICAL GENERATING SYSTEMS ASSOCIATION (EGSA)

EGSA 101P (1995a) Engine Driven Generator Sets

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (1997) National Electrical Safety Code

IEEE Std 1 (1986; R 1992) General Principles for
Temperature Limits in the Rating of Electric
Equipment and for the Evaluation of
Electrical Insulation

IEEE Std 48 (1998) Standard Test Procedures and
Requirements for Alternating-Current Cable
Terminations 2.5 kV through 765 kV

IEEE Std 100 (1997) IEEE Standard Dictionary of Electrical
and Electronics Terms

IEEE Std 120 (1989) Electrical Measurements in Power
Circuits

IEEE Std 404 (1993) Cable Joints for Use with Extruded
Dielectric Cable Rated 5000 V Through 138 000
V and Cable Joints for Use with Laminated
Dielectric Cable Rated 2500 V Through 500 000
V

IEEE Std 519 (1992) Harmonic Control in Electrical Power
Systems

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS
INDUSTRY (MSS)

MSS SP-58 (1993) Pipe Hangers and Supports - Materials,
Design and Manufacture

MSS SP-69 (1996) Pipe Hangers and Supports - Selection
and Application

MSS SP-80 (1997) Bronze Gate, Globe, Angle and Check Valves

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA AB 1 (1993) Molded Case Circuit Breakers and Molded Case Switches

NEMA ICS 2 (1993) Industrial Controls and Systems Controllers, Contactors, and Overload Relays Rated Not More Than 2,000 Volts AC or 750 Volts DC

NEMA ICS 6 (1993) Industrial Control and Systems, Enclosures

NEMA WC 74 (2000) 5-46 kV Shielded Power Cable for Use in the Transmission and Distribution of Electric Energy

NEMA MG 1 (1998) Motors and Generators

NEMA PB 1 (1995) Panelboards

NEMA SG 3 (1995) Power Switching Equipment

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 30 (1996; Errata TIA 96-2) Flammable and Combustible Liquids Code

NFPA 37 (1998) Installation and Use of Stationary Combustion Engines and Gas Turbines

NFPA 70 (2002) National Electrical Code

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE ARP 892 (1965; R 1994) D-C Starter-Generator, Engine

SAE J 537 (1996) Storage Batteries

UNDERWRITERS LABORATORIES (UL)

UL 489 (1996; Rev thru Dec 1998) Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures

UL 891 (1994; Rev thru Jan 1995) Dead-Front Switchboards

UL 1236 (1994; Rev thru Mar 1999) Battery Chargers for Charging Engine-Starter Batteries

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Operation Manual; G

- a. Base-mounted equipment, complete with base and attachments including anchor bolt template and recommended clearances for maintenance and operation.
- b. Starting system.
- c. Fuel system.
- d. Cooling system.
- e. Exhaust system.
- f. Electric wiring of relays, breakers, programmable controllers, and switches including single line and wiring diagrams.
- g. Lubrication system, including piping, pumps, strainers, filters, heat exchangers for lube oil and turbocharger cooling, electric heater, controls and wiring.
- h. Location, type, and description of vibration isolation devices.
- i. The safety system, including wiring schematics.
- j. One-line schematic and wiring diagrams of the generator, exciter, regulator, governor, and all instrumentation.
- k. Panel layouts.
- l. Mounting and support for each panel and major piece of electrical equipment.
- m. Engine-generator set rigging points and lifting instructions.

Acceptance; G

Drawings which accurately depict the as-built configuration of the installation, upon acceptance of the diesel-generator set installation. Layout drawings shall be revised to reflect the as-built conditions and submitted with the as-built drawings.

SD-03 Product Data

Performance Tests; G

Calculations of the engine and generator output power capability, including efficiency and parasitic load data.

Sound Limitations; G

Sound power level data for the packaged unit operating at 100% load in a free field environment. The data should demonstrate compliance with the sound limitation requirements of this specification.

Generator; G

Each generator KW rating and short circuit capacity (both symmetric and asymmetric).

Integral Main Fuel Storage Tank; G

Calculations for the capacity of each storage tank, including allowances for recirculated fuel, usable tank capacity, and duration of fuel supply.

Power Factor; G

Generator capability curve showing generator kVA output (kW vs. kvar) for both leading and lagging power factors ranging from 0 to 1.0.

Time-Delay on Alarms; G

The magnitude of monitored values which define alarm or action setpoints, and the tolerance (plus and/or minus) at which the device activates the alarm or action.

Cooling System; G

a. The maximum and minimum allowable inlet temperatures of the cooling air.

b. The maximum allowable temperature rise in the cooling air across the engine.

c. The minimum allowable inlet fuel temperature.

Manufacturer's Catalog; G

Manufacturer's standard catalog data describing and depicting each engine-generator set and all ancillary equipment in sufficient detail to demonstrate specification compliance.

Vibration Isolation; G

Vibration isolation system performance data for the range of frequencies generated by the engine-generator set during operation from no load to full load and the maximum vibration transmitted to the floor. Description of seismic qualification of the engine-generator mounting, base, and vibration isolation.

Instructions; G

Instructions including: the manufacturer's pre-start checklist and precautions; startup procedures for test mode, manual-start mode, and automatic-start mode, (as applicable); running checks, procedures, and precautions; and shutdown procedures, checks, and precautions. Instructions shall include procedures for interrelated equipment (such as heat recovery systems, co-generation, load-shedding, and automatic transfer switches). Instructions shall be weatherproof, laminated in plastic, framed, and posted where directed. Posted data shall include wiring and control diagrams showing the key mechanical and electrical control elements, and a diagrammatic layout of the system.

Experience; G

Statement showing that each component manufacturer has a minimum of 3 years experience in the manufacture, assembly and sale of components used with stationary diesel-engine generator sets for commercial and industrial use.

Statement showing that the engine-generator set manufacturer/assembler has a minimum of 3 years experience in the manufacture, assembly and sale of stationary diesel engine-generator sets for commercial and industrial use.

Field Engineer; G

A letter listing the qualifications, schools, formal training, and experience of the field engineer.

Site Welding; G

A letter listing the welder qualifying procedures for each welder, complete with supporting data such as test procedures used, what was tested to, and a list of the names of all welders and their qualifications symbols.

General Installation; G

A complete copy of the manufacturer's installation procedures. A detailed description of the manufacturer's recommended break-in procedure.

SD-06 Test Reports

Onsite Inspection and Tests; G

a. A letter giving notice of the proposed dates of all onsite inspections and tests at least 14 days prior to beginning tests.

b. A detailed description of the Contractor's proposed procedures for onsite tests including the test including the test plan and a listing of equipment necessary to perform the tests. Submission shall be at least 20 days prior to beginning tests.

c. Six copies of the onsite test data described below in 8-1/2 x 11 inch (216 x 279 mm) 3-ring binders with a separate section for each test. Sections shall be separated by dividers with tabs. Data plots shall be full size 8-1/2 x 11 inches (216 x 279 mm) minimum), showing all grid lines, with full resolution.

- (1) A description of the procedures for onsite tests.
- (2) A list of equipment used, with calibration certifications.
- (3) A copy of measurements taken, with required plots and graphs.
- (4) The date of testing.
- (5) The parameters verified.
- (6) The condition specified for the parameter.
- (7) The test results, signed and dated.
- (8) A description of all adjustments made.

SD-07 Certificates

Vibration Isolation; G

Torsional analysis including prototype testing or calculations which certify and demonstrate that no damaging or dangerous torsional vibrations will occur when the prime mover is connected to the generator, at synchronous speeds, plus/minus 10%.

General Requirements; G

- a. Prototype Tests: Manufacturer's standard certification that prototype tests were performed for the generator model proposed.
- b. Reliability and Durability: Documentation which cites engines and generators in similar service to demonstrate compliance with the requirements of this specification. Certification does not exclude annual technological improvements made by a manufacturer in the basic standard model set on which experience was obtained, provided parts interchangeability has not been substantially affected and the current standard model meets all the performance requirements of this specification. For each different set, 2 like sets shall have performed satisfactorily in a stationary power application, independent and separate from the physical location of the manufacturer's and assembler's facilities, for a minimum of 2 consecutive years without any failure to start, including periodic exercise. The certification shall state that for the set proposed to meet this specification, there were no failures resulting in downtime for repairs in excess of 72 hours or any failure due to overheating during 2 consecutive years of service. Like sets are of the same model, speed, bore, stroke, number and configuration of cylinders, and output power rating. Like generators are of the same model, speed, pitch, cooling, exciter, voltage regulator and output power rating. A list shall be provided with the name of the

installations, completion dates, and name and telephone number of a point of contact.

c. Flywheel Balance: Manufacturer's certification that the flywheel has been statically and dynamically balanced and is capable of being rotated at 125% of rated speed without vibration or damage.

Emissions; G

A certification from the engine manufacturer stating that the engine exhaust emissions meet federal, state, and local regulations and restrictions specified. At a minimum, this certification shall include emission factors for criteria pollutants including nitrogen oxides, carbon monoxide, particulate matter, sulfur dioxide, non-methane hydrocarbon, and for hazardous air pollutants (HAPs).

Sound limitations; G

A certification from the manufacturer stating that the sound emissions meet the specification.

Materials and Equipment; G

A letter stating that where materials or equipment are specified to comply with requirements of UL, or other standards, written proof of such compliance has been obtained. The label or listing of the specified agency, or a written certificate from an approved, nationally recognized testing organization equipped to perform such services, stating that the items have been tested and conform to the requirements and testing methods of the specified agency are acceptable as proof.

Factory Inspection and Tests; G

A certification that each engine generator set passed the factory tests and inspections and a list of the test and inspections.

Inspections; G

A letter certifying that all facilities are complete and functional, that each system is fully functional, and that each item of equipment is complete, free from damage, adjusted, and ready for beneficial use.

Cooling System; G

Certification that the engine-generator set and cooling system function properly in the ambient temperatures specified.

1.4 SYSTEM DESCRIPTION

Each engine-generator set shall be provided and installed complete and totally functional, with all necessary ancillary equipment to include air filtration; starting system; generator controls, protection, and isolation; instrumentation; lubrication; fuel system; cooling system; and engine

exhaust system. Each engine generator set shall satisfy the requirements specified in the Engine Generator Parameter Schedule.

1.4.1 Engine-Generator Parameter Schedule

ENGINE GENERATOR PARAMETER SCHEDULE

Service Load	400 kVA
Power Factor	0.8 lagging
Motor Starting kVA (maximum)	33 kVA
Maximum Speed	1800 rpm
Engine-Generator Application	stand-alone
Engine Cooling Type	water/ethylene glycol
Heat Exchanger Type	fin-tube
Governor Type	Droop
Frequency Regulation (droop) (No load to full load)	3% (max.)
Frequency Bandwidth (steady state)	$\pm 0.25\%$
Voltage Regulation (No load to full load)	$\pm 2\%$ (max.)
Voltage Bandwidth (steady state)	$\pm 2\%$
Frequency	60 Hz
Voltage	480 volts
Phases	3 Phase, Wye
Minimum Generator Reactance	0.16 per unit Subtransient
Nonlinear Loads	150 kVA
Max Time to Start and be Ready to Assume Load	10 seconds
Max Summer Outdoor Temp (Ambient)	110 degrees F
Min Winter Outdoor Temp (Ambient)	18 degrees F
Installation Elevation	322 feet (98 meters) above sea level

1.4.2 Output Capacity

Generator set shall provide power equal to the sum of service load plus the machine's efficiency loss and associated ancillary equipment loads. Rated output capacity shall also consider engine and/or generator oversizing required to meet requirements in paragraph Engine-Generator Parameter Schedule.

1.4.3 Power Rating

Standby ratings shall be in accordance with EGSA 101P.

1.5 GENERAL REQUIREMENTS

1.5.1 Engine-Generator Set

Each set shall consist of one engine, one generator, and one exciter, mounted, assembled, and aligned on one base; and all other necessary ancillary equipment which may be mounted separately. Sets shall be assembled and attached to the base prior to shipping. Set components shall be environmentally suitable for the locations shown and shall be the manufacturer's standard product offered in catalogs for commercial or industrial use. A generator strip heater shall be provided for moisture control when the generator is not operating.

1.5.2 Nameplates

Each major component of this specification shall have the manufacturer's name, type or style, model or serial number, and rating number on a plate secured to the equipment. As a minimum, nameplates shall be provided for: Engines; Relays; Generators; Transformers (CT & PT); Regulators; Pumps and pump motors; Governors; Generator Breaker.

Engines	Relays
Generators	Transformers (CT & PT)
Regulators	Pumps and pump motors
Governors	Generator Breaker

Where the following equipment is provided as a standard component by the diesel-engine generator set manufacturer, the nameplate information may be provided in the maintenance manual in lieu of nameplates.

Battery charger	Heaters
Exhaust mufflers	Exciters
Switchgear	Silencers
Battery	

1.5.3 Personnel Safety Device

Exposed moving parts, parts that produce high operating temperatures, parts which may be electrically energized, and parts that may be a hazard to operating personnel during normal operation shall be insulated, fully enclosed, guarded, or fitted with other types of safety devices. The safety

devices shall be installed so that proper operation of the equipment is not impaired.

1.5.4 Verification of Dimensions

Before performing work, the premises shall be visited and details of the work verified. The Contracting Officer shall be advised in writing of any discrepancies before performing any work.

1.5.5 Conformance to Codes and Standards

Where equipment is specified to conform to requirements of any code or standard such as UL, the design, fabrication and installation shall conform to the code.

1.5.6 Site Welding

Structural members shall be welded in accordance with Section 05090A WELDING, STRUCTURAL. For all other welding, procedures and welders shall be qualified in accordance with ASME BPVC SEC IX. Welding procedures qualified by others, and welders and welding operators qualified by a previously qualified employer may be accepted as permitted by ASME B31.1. Welder qualification tests shall be performed for each welder whose qualifications are not in compliance with the referenced standards. The Contracting Officer shall be notified 24 hours in advance of qualification tests. The qualification tests shall be performed at the work site if practical. The welder or welding operator shall apply the assigned personal symbol near each weld made as a permanent record

1.5.7 Engine Generator Set Enclosure

a. Provide each engine generator assembly with a walk-around type, corrosion-resistant, weatherproof enclosure, Enclosure size and arrangement shall permit all operation and servicing of engine generator set from inside. Provide 30-inch (76.2 cm) minimum walkway width, or as necessary for code-required electric clearances. Provide step with hand rail at entrance.

b. Formed steel, 14-gauge minimum. Base/anchoring frame shall be galvanized angle-type and shall facilitate removal of enclosure from concrete foundation as a complete unit. Provide lifting eyes. Side panels and doors (full height) shall not exceed 36 inches (76.2 cm) in width. All fasteners, hinges (greasable), and hardware shall be stainless steel. Provide one-piece, welded, pitched roof with provisions for support and mounting of muffler and exhaust pipe. Provide perimeter drip edge. All doors shall be provided with keyed locksets.

c. Provide sound attenuating construction to limit sound levels to those described in this specification section Paragraph 2.6, Sound Limitations.

d. Provide switched interior incandescent lighting, duplex receptacles (one each side, minimum), motorized 120V ac inlet and discharge air dampers with blade and side seals, oil and water drain provisions, and fume vent provisions. All electrical loads shall be prewired to the distribution panelboard. Route all wiring in code-size conduit. Provide equipment grounding conductors in all circuits.

e. Coating: Phosphate cleaned, two coats of rust-inhibitive primer, two finish coats, ANSI 61, light grey.

f. Provide power distribution panelboard to serve all engine generator set and enclosure loads; service shall be 60 amp, 208/120V ac, 3-phase.

1.5.8 Vibration Isolation

The engine-generator set shall be provided with vibration-isolation in accordance with the manufacturer's standard recommendation.

1.5.9 Experience

Each component manufacturer shall have a minimum of 3 years experience in the manufacture, assembly and sale of components used with stationary diesel engine-generator sets for commercial and industrial use. The engine-generator set manufacture/assembler shall have a minimum of 3 years experience in the manufacture, assembly and sale of stationary diesel engine-generator sets for commercial and industrial use.

1.5.10 Field Engineer

The engine-generator set manufacturer or assembler shall furnish a qualified field engineer to supervise the complete installation of the engine-generator set, assist in the performance of the onsite tests, and instruct personnel as to the operational and maintenance features of the equipment. The field engineer shall have attended the engine-generator manufacturer's training courses on installation and operation and maintenance for engine generator sets.

1.6 STORAGE AND INSTALLATION

The Contractor shall properly protect material and equipment in accordance with the manufacturers recommended storage procedures, before, during, and after installation. Stored items shall be protected from the weather and contamination. During installation, piping and similar openings shall be capped to keep out dirt and other foreign matter.

1.7 OPERATION AND MAINTENANCE MANUALS

The operation and maintenance manuals shall be submitted and approved prior to commencing onsite tests.

1.7.1 Operation Manual

Three copies of the operation manual in 8-1/2 x 11 inch (216 x 279 mm) three-ring binders shall be provided. Sections shall be separated by heavy plastic dividers with tabs which identify the material in the section. Drawings shall be folded blue lines, with the title block visible, and placed in 8-1/2 x 11 inch (216 x 279 mm) plastic pockets with reinforced holes. The manual shall include:

- a. Step-by-step procedures for system startup, operation, and shutdown;

- b. Drawings, diagrams, and single-line schematics to illustrate and define the electrical, mechanical, and hydraulic systems with their controls, alarms, and safety systems;
- c. Procedures for interface and interaction with related systems to include automatic transfer switches.

1.7.2 Maintenance Manual

Three copies of the manufacturers standard maintenance manual.

1.8 SPECIAL TOOLS AND FILTERS

Two sets of special tools and two sets of filters required for maintenance shall be provided. Special tools are those that only the manufacturer provides, for special purposes, or to reach otherwise inaccessible parts. One handset shall be provided for each electronic governor when required to indicate and/or change governor response settings. Two complete sets of filters shall be supplied in a suitable storage box. these filters shall be in addition to filters replaced after testing.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Materials and equipment shall be as specified.

2.1.1 Circuit Breakers, Low Voltage

NEMA AB 1, UL 489, and NEMA SG 3.

2.1.2 Filter Elements (Fuel-oil, Lubricating-oil, and Combustion-air)

Manufacturer's standard.

2.1.3 Instrument Transformers

ANSI C12.11.

2.1.4 Pipe (Sleeves, Fuel/Lube-oil, Compressed-Air, Coolant and Exhaust)

ASTM A 53/A 53M, ASTM A 106 or ASTM A 135, steel pipe. Pipe smaller than 2 inches (50 mm) shall be Schedule 80. Pipe 2 inches (50 mm) and larger shall be Schedule 40.

2.1.5 Pipe Flanges and Fittings

- a. Pipe Flanges and Flanged Fittings: ASTM A 181/A 181M, Class 60, or ASME B16.5, Grade 1, Class 150.
- b. Pipe Welding Fittings: ASTM A 234/A 234M, Grade WPB or WPC, Class 150, or ASME B16.11, 3000 lb (1360.7 kg).
- c. Threaded Fittings: ASME B16.3, Class 150.
- d. Valves: MSS SP-80, Class 150.
- e. Gaskets: Manufacturers Standard.

2.1.6 Pipe Hangers

MSS SP-58 and MSS SP-69.

2.1.7 Electrical Enclosures

2.1.7.1 General

NEMA ICS 6.

2.1.7.2 Panelboards

NEMA PB 1.

2.1.8 Electric Motors

Electric motors shall conform to the requirements of NEMA MG 1. Motors shall have sealed ball bearings, a maximum speed of 1800 rpm and integral automatic or manual reset thermal overload protectors. Motors used indoors shall have drip proof frames; those used outside shall be totally enclosed. AC motors larger than 1/2 Hp (373 W) shall be of the squirrel cage induction type for standard voltage of 460 volts, 60 Hz three phase power. AC motors 1/2 Hp (373 W) or smaller, shall be for standard voltage 115 volts, 60 Hz, single phase power.

2.1.9 Motor Controllers

Motor controllers and starters shall conform to the requirements of NFPA 70 and NEMA ICS 2.

2.2 ENGINE

Each engine shall operate on No. 2-D diesel conforming to ASTM D 975, shall be designed for stationary applications and shall be complete with ancillaries. The engine shall be a standard production model described in the manufacturer's catalog. The engine shall be naturally aspirated, scavenged, supercharged or turbocharged. The engine shall be two- or four-stroke-cycle and compression-ignition type. The engine shall be vertical inline, V-, or opposed-piston type, with a solid cast block or individually cast cylinders. The engine shall have a minimum of two cylinders. Opposed-piston type engines shall have no less than four cylinders. Each block shall have a coolant drain port. Each engine shall be equipped with an overspeed sensor.

2.3 FUEL SYSTEM

The fuel system for each engine generator set shall conform to the requirements of NFPA 30 and NFPA 37 and contain the following elements.

2.3.1 Pumps

2.3.1.1 Main Pump

Each engine shall be provided with an engine driven pump. The pump shall supply fuel at a minimum rate sufficient to provide the amount of fuel required to meet the performance indicated within the parameter schedule.

The fuel flow rate shall be based on meeting the load requirements and all necessary recirculation.

2.3.2 Filter

A minimum of one full flow fuel filter shall be provided for each engine. The filter shall be readily accessible and capable of being changed without disconnecting the piping or disturbing other components. The filter shall have inlet and outlet connections plainly marked.

2.3.3 Relief/Bypass Valve

A relief/bypass valve shall be provided to regulate pressure in the fuel supply line, return excess fuel to a return line, and prevent the build-up of excessive pressure in the fuel system.

2.3.4 Integral Main Fuel Storage Tank

Each engine shall be provided with an integral main fuel tank. Each tank shall be factory installed and provided as an integral part of the diesel generator manufacturer's product. Each tank shall be provided with connections for fuel supply line, fuel return line, local fuel fill port, gauge, vent line, and float switch assembly. A fuel return line cooler shall be provided as recommended by the manufacturer and assembler. The temperature of the fuel returning to the tank shall be below the flash point of the fuel. Each engine-generator set provided with weatherproof enclosures shall have its tank mounted within the enclosure. The fuel fill line shall be accessible without opening the enclosure.

2.3.4.1 Capacity

Each tank shall have capacity to supply fuel to the engine for an uninterrupted 12-hour period at 100% rated load without being refilled.

2.3.4.2 Local Fuel Fill

Each local fuel fill port on the day tank shall be provided with a screw-on cap.

2.3.4.3 Fuel Level Controls

- a. Each tank shall have a float-switch assembly to perform the following functions:
 - (1) Activate the "Low Fuel Level" alarm at 70% of the rated tank capacity.
 - (2) Activate the "Overfill Fuel Level" alarm at 95% of the rated tank capacity.

2.3.4.4 Arrangement

Integral tanks may allow gravity flow into the engine. Gravity flow tanks and any tank that allows a fuel level above the fuel injectors shall be provided with an internal or external factory installed valve located as near as possible to the shell of the tank. The valve shall close when the engine is not operating. Integral day tanks shall be provided with any

necessary pumps to supply fuel to the engine as recommended by the generator set manufacturer. The fuel supply line from the tank to the manufacturer's standard engine connection shall be welded pipe.

2.4 LUBRICATION

Each engine shall have a separate lube-oil system conforming to NFPA 30 and NFPA 37. Each system shall be pressurized by engine-driven oil pumps. Each system shall be furnished with a relief valve for oil pressure regulation (for closed systems) and a dip-stick for oil level indications. The crankcase shall be vented in accordance with the manufacturer's recommendation except that it shall not be vented to the engine exhaust system. Crankcase breathers, if provided on engines installed in buildings or enclosures, shall be piped to vent to the outside. The system shall be readily accessible for service such as draining, refilling, etc. Each system shall permit addition of oil and have oil-level indication with the set operating. The system shall utilize an oil cooler as recommended by the engine manufacturer.

2.4.1 Filter

One full-flow filter shall be provided for each pump. The filter shall be readily accessible and capable of being changed without disconnecting the piping or disturbing other components. The filter shall have inlet and outlet connections plainly marked.

2.4.2 Lube-Oil Sensors

Each engine shall be equipped with lube-oil pressure sensors. Pressure sensors shall be located downstream of the filters and provide signals for required indication and alarms.

2.5 COOLING SYSTEM

Each engine cooling system shall operate automatically while the engine is running. Each cooling system shall be sized for the maximum summer outdoor design temperature and site elevation. Water-cooled system coolant shall use a combination of water and ethylene-glycol sufficient for freeze protection at the minimum winter outdoor temperature specified. The maximum temperature rise of the coolant across the engine shall be no more than that recommended and submitted in accordance with paragraph SUBMITTALS.

2.5.1 Coolant Pumps

Coolant pumps shall be the centrifugal type. Each engine shall have an engine-driven primary pump. Secondary pumps shall be electric motor driven and have automatic controllers.

2.5.2 Heat Exchanger

Each heat exchanger shall be of a size and capacity to limit the maximum allowable temperature rise in the coolant across the engine to that recommended and submitted in accordance with paragraph SUBMITTALS for the maximum summer outdoor design temperature and site elevation. Each heat exchanger shall be corrosion resistant, suitable for service in ambient conditions of application.

2.5.2.1 Fin-Tube-Type Heat Exchanger (Radiator)

Heat exchanger may be factory coated with corrosive resistant film providing that corrosion measures are taken to restore the heat rejection capability of the radiator to the initial design requirement via oversizing, or other compensating methods. Internal surfaces shall be compatible with liquid fluid coolant used. Materials and coolant are subject to approval by the Contracting Officer. Heat exchangers shall be pressure type incorporating a pressure valve, vacuum valve and a cap. Caps shall be designed for pressure relief prior to removal. Each heat exchanger and the entire cooling system shall be capable of withstanding a minimum pressure of 7 psi (48 kPa gauge). Each heat exchanger shall be protected with a strong grille or screen guard. Each heat exchanger shall have at least two tapped holes. One tapped hole in the heat exchanger shall be equipped with a drain cock, the rest shall be plugged.

2.5.3 Temperature Sensors

Each engine shall be equipped with coolant temperature sensors. Temperature sensors shall provide signals for pre-high and high indication and alarms.

2.6 SOUND LIMITATIONS

The noise generated by the diesel generator set operating at 100 percent load shall not exceed the following sound pressure levels in any of the indicated frequencies when measured in a free field at a radial distance of 22.9 feet (7 meters) at 45 degrees apart in all directions.

Frequency Band (Hz)	Maximum Acceptable Pressure Level (Decibels)
31	87
63	87
125	77
250	70
500	64
1,000	61
2,000	60
4,000	60
8,000	60

The noise generated by the installed diesel generator set operating at 100 percent load shall not exceed the following sound pressure levels in any of the indicated frequencies when measured at a distance of 75 feet (23 m) from the end of the exhaust and air intake piping directly along the path of intake and discharge for horizontal piping.

Frequency Band (Hz)	Maximum Acceptable Pressure Level (Decibels)
31	87
63	87
125	77
250	70

500	64
1,000	61
2,000	60
4,000	60
8,000	60

2.7 AIR INTAKE EQUIPMENT

Filters and silencers shall be provided in locations that are convenient for servicing. The silencer shall be of the high-frequency filter type, located in the air intake system as recommended by the engine manufacturer. Silencer shall be capable of reducing the noise level at the air intake to a point below the maximum acceptable levels specified in paragraph SOUND LIMITATIONS. A combined filter-silencer unit meeting requirements for the separate filter and silencer items may be provided. Expansion elements in air-intake lines shall be rubber.

2.8 EXHAUST SYSTEM

The system shall be separate and complete for each engine. Piping shall be supported so as to minimize vibration. Where a V-type engine is provided, a V-type connector with necessary flexible sections and hardware shall connect the engine exhaust outlets.

2.8.1 Flexible Sections and Expansion Joints

A flexible section at each engine and an expansion joint at each muffler shall be provided. Flexible sections and expansion joints shall have flanged connections. Flexible sections shall be made of convoluted seamless tube without joints or packing. Expansion joints shall be the bellows type. Expansion and flexible elements shall be stainless steel suitable for diesel-engine exhaust gas at the maximum exhaust temperature that is specified by the engine manufacturer. Expansion and flexible elements shall be capable of absorbing vibration from the engine and compensation for thermal expansion and contraction.

2.8.2 Exhaust Muffler

A chamber type exhaust muffler shall be provided. The muffler shall be constructed of welded steel and designed for outside horizontal mounting. Eyebolts, lugs, flanges, or other items shall be provided as necessary for support in the location and position indicated. Pressure drop through the muffler shall not exceed the recommendations of the engine manufacturer. Outside mufflers shall be zinc coated or painted with high temperature 400 degrees F (204 degrees C) resisting paint. The muffler and exhaust piping together shall reduce the noise level to less than the maximum acceptable level listed for sound limitations in paragraph SOUND LIMITATIONS. The muffler shall have a drain valve, nipple, and cap at the low-point of the muffler.

2.8.3 Exhaust Piping

Horizontal sections of exhaust piping shall be sloped downward away from the engine to a condensate trap and drain valve. Changes in direction shall be long-radius. Exhaust piping, mufflers and silencers installed inside any building shall be insulated in accordance with paragraph THERMAL INSULATION and covered to protect personnel. Vertical exhaust piping shall be provided

with a hinged, gravity operated, self-closing, rain cover. Exhaust piping shall be sized at a gas velocity of less than 5,000 feet per minute (25.4 meters per second).

2.9 EMISSIONS

The finished installation shall comply with Federal, state, and local regulations and restrictions regarding the limits of emissions.

2.10 STARTING SYSTEM

The starting system for engine generator sets used in non-emergency applications shall be as follows.

2.10.1 Controls

An engine control switch shall be provided with functions including: run/start (manual), off/reset, and automatic mode. Start-stop logic shall be provided for adjustable cycle cranking and cool down operation. The logic shall be arranged for manual starting and fully automatic starting in accordance with paragraph AUTOMATIC ENGINE-GENERATOR SET SYSTEM OPERATION. Electrical starting systems shall be provided with an adjustable cranking limit device to limit cranking periods from 1 second up to the maximum duration.

2.10.2 Capacity

The starting system shall be of sufficient capacity, at the maximum outdoor summer temperature specified to crank the engine without damage or overheating. The system shall be capable of providing a minimum of three cranking periods with 15-second intervals between cranks. Each cranking period shall have a maximum duration of 15 seconds.

2.10.3 Functional Requirements

Starting system shall be manufacturers recommended dc system utilizing a negative circuit ground. Starting motors shall be in accordance with SAE ARP 892.

2.10.4 Battery

A starting battery system shall be provided and shall include the battery, battery rack, intercell connectors, and spacers. The battery shall be in accordance with SAE J 537. Critical system components (rack, protection, etc.) shall be sized to withstand the seismic acceleration forces specified. The battery shall be lead-acid type, with sufficient capacity, at the minimum outdoor winter temperature specified to provide the specified cranking periods. Valve-regulated lead-acid batteries are not acceptable.

2.10.5 Battery Charger

A current-limiting battery charger, conforming to UL 1236, shall be provided and shall automatically recharge the batteries. The charger shall be capable of an equalize charging rate for recharging fully depleted batteries within 24 hours and a float charge rate for maintaining the batteries in prime starting condition. An ammeter shall be provided to indicate charging rate. A timer shall be provided for the equalize charging rate setting. A

battery is considered to be fully depleted when the output voltage falls to a value which will not operate the engine generator set and its components.

2.10.6 Starting Aids

The manufacturer shall provide the following methods to assist engine starting.

2.10.6.1 Glow Plugs

Glow plugs shall be designed to provide sufficient heat for combustion of fuel within the cylinders to guarantee starting at an ambient temperature of minus 25 degrees F (minus 32 degrees C).

2.10.6.2 Jacket-Coolant Heaters

A thermostatically controlled electric heater shall be mounted in the engine coolant jacketing to automatically maintain the coolant within plus or minus 3 degrees of the control temperature. The heater shall operate independently of engine operation so that starting times are minimized. The control temperature shall be the temperature recommended by the engine manufacturer to meet the starting time specified.

2.11 GOVERNOR

Each engine shall be provided with a governor which maintains the frequency within a bandwidth of the rated frequency, over a steady-state load range of zero to 100% of rated output capacity. The governor shall be configured for safe manual adjustment of the speed/frequency during operation of the engine generator set, without special tools, from 90 to 110 % of the rated speed/frequency, over a steady state load range of zero to 100% of rated capacity. Droop governors shall maintain the midpoint of the frequency bandwidth linearly for steady-state loads over the range of zero to 100% of rated output capacity, with 3% droop.

2.12 GENERATOR

Each generator shall be of the synchronous type, one or two bearing, conforming to NEMA MG 1, equipped with winding terminal housings in accordance with NEMA MG 1, equipped with an amortisseur winding, and directly connected to the engine. Insulation shall be Class F. Generator design shall protect against mechanical, electrical and thermal damage due to vibration, 25 percent overspeeds, or voltages and temperatures at a rated output capacity of 100 percent. Generator ancillary equipment shall meet the short circuit requirements of NEMA MG 1. Frames shall be the drip-proof type.

2.12.1 Current Balance

At 100 percent rated load, and load impedance equal for each of the three phases, the permissible current difference between any two phases shall not exceed 2 percent of the largest current on either of the two phases.

2.12.2 Voltage Balance

At any balanced load between 75 and 100 percent of rated load, the difference in line-to-neutral voltage among the three phases shall not

exceed 1 percent of the average line-to-neutral voltage. For a single-phase load condition, consisting of 25 percent load at unity power factor placed between any phase and neutral with no load on the other two phases, the maximum simultaneous difference in line-to-neutral voltage between the phases shall not exceed 3 percent of rated line to neutral voltage. The single-phase load requirement shall be valid utilizing normal exciter and regulator control. The interpretation of the 25 percent load for single phase load conditions means 25 percent of rated current at rated phase voltage and unity power factor.

2.12.3 Waveform

The deviation factor of the line-to-line voltage at zero load and at balanced full rated load at 0.8 power factor shall not exceed 10%. The RMS of all harmonics shall be less than 5.0% and that of any one harmonic less than 3.0% at full rated load. Each engine-generator shall be designed and configured to meet the total harmonic distortion limits of IEEE Std 519.

2.13 EXCITER

The generator exciter shall be of the brushless type. Semiconductor rectifiers shall have a minimum safety factor of 300% for peak inverse voltage and forward current ratings for all operating conditions, including 110% generator output at 104 degrees F (40 degrees C) ambient. The exciter and regulator in combination shall maintain generator-output voltage within the limits specified.

2.14 VOLTAGE REGULATOR

Each generator shall be provided with a solid-state voltage regulator, separate from the exciter. The regulator shall maintain the voltage within a bandwidth of the rated voltage, over a steady-state load range of zero to 100% of rated output capacity. Regulator shall be configured for safe manual adjustment of the engine generator voltage output without special tools, during operation from 90 to 110% of the rated voltage over the steady state load range of zero to 100% of rated output capacity. Regulation drift shall not exceed plus or minus 0.5% for an ambient temperature change of 36 degrees F (20 degrees C).

2.14.1 Steady State Performance (Regulation or Voltage Droop).

The voltage regulator shall have a maximum droop of 2% of rated voltage over a load range from 0 to 100% of rated output capacity and automatically maintain the generator output voltage within the specified operational bandwidth.

2.15 GENERATOR PROTECTION

Short circuit and overload protection for the generator shall be provided. The generator circuit breaker (IEEE Device 52) ratings shall be consistent with the generator rated voltage and frequency, with continuous, short circuit and interrupting current ratings to match the generator capacity. The manufacturer shall determine the short circuit current interrupting rating of the breaker. The breaker shall be engine generator base mounted by the engine-generator set manufacturer. Molded case breakers shall be provided with shunt trip. Surge protection shall be provided for each phase of the generator, to be mounted at the generator terminals.

2.15.1 Main Circuit Breaker

- a. Type: Molded case.
- b. Current Rating: 600 amp.
- c. Interrupt Rating 42,000 amps rms symmetrical at 480 volts.
- d. Trips:
 - 1) Solid state, rms sensing.
 - 2) Adjustable Functions: Long-time current pickup; long-time delay; normal range instantaneous short-time pickup; short-time delay with I²t function; ground fault pickup; ground fault delay.
- e. Enclosure:
 - 1) Rating: NEMA 250, Type 12.
 - 2) Mounted with vibration isolation from Engine Generator Set.

2.15.2 Panelboards

Panelboards shall be metal-enclosed, general purpose, 3-phase, 4-wire, 600 volt rated, with neutral bus and continuous ground bus, conforming to NEMA PB 1 and UL 891. Neutral bus and ground bus capacity shall be full capacity. Enclosure designs, construction, materials and coatings shall be suitable for the application and environment. Bus continuous current rating shall be as indicated. Current withstand rating (short circuit rating) shall match the generator capacity. Buses shall be copper.

2.15.3 Devices

Switches, circuit breakers, switchgear, fuses, relays, and other protective devices shall be as specified in Section 16415A ELECTRICAL WORK, INTERIOR.

2.16 SAFETY SYSTEM

Devices, wiring, remote panels, local panels, etc., shall be provided and installed as a complete system to automatically activate the appropriate signals and initiate the appropriate actions. The safety system shall be provided with a self-test method to verify its operability. Alarm signals shall have manual acknowledgement and reset devices. The alarm signal systems shall reactivate for new signals after acknowledgment is given to any signal. The systems shall be configured so that loss of any monitoring device shall be dealt with as an alarm on that system element.

2.16.1 Audible Signal

The audible alarm signal shall sound at a frequency of 70 Hz at a volume of 75 dB at 10 feet (3.1 m). The sound shall be continuously activated upon alarm and silenced upon acknowledgment. Signal devices shall be located as shown.

2.16.2 Visual Signal Signal

The visual alarm signal shall be a panel light. The light shall be normally off, activated to be blinking upon alarm. The light shall change to continuously light upon acknowledgement. If automatic shutdown occurs, the display shall maintain activated status to indicate the cause of failure and shall not be reset until cause of alarm has been cleared and/or restored to normal condition. Shutdown alarms shall be red; all other alarms shall be amber.

2.16.3 Alarms and Action Logic

2.16.3.1 Shutdown

Simultaneous activation of the audible signal, activation of the visual signal, stopping the engine, and opening the generator main circuit breakers shall be accomplished.

2.16.3.2 Problem

Activation of the visual signal shall be accomplished.

2.16.4 Local Alarm Panel

Device/Condition/ Function	Action/Location/ Function	No. of Manufacturers Offering
Low Coolant Level	SD/CP VA	3
Overvoltage Protection Shutdown	SD/CP VA O	3
Underfrequency	SD/CP VA	1
Undervoltage	SD/CP VA	1
Magnetic Pickup Failure	SD/CP VA	1
Overcurrent	SD/CP VA	1
Short Circuit	SD/CP VA	1
Auxiliary Fault Alarm	CP VA	1
Audible Alarm	CP AA	1
Overcurrent	CP VA	1
Oil Pressure Sender Fault	CP VA	1
Weak Battery	CP VA	1

A local alarm panel shall be provided with the following shutdown and alarm functions as indicated and including the listed Corps of Engineers requirements, mounted either on or adjacent to the engine generator set.

Device/ Condition/ Required	What/Where/Size	NFPA 110 Level 2	Corps of Engrs Function
Shutdowns W/Alarms			
High engine temperature	Automatic/ jacket water/ cylinder	SD/CP VA	SD VA

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Low lube-oil pressure	Automatic/pressure/level	SD/CP VA	SD VA
Overspeed shutdown \$ alarm	(110% (+ 2%) of rated speed	SD/CP VA	SD VA
Overcrank failure to start	Automatic/Failure to start		SD/CP VA
Air shutdown damper (200-600kW)	When used		SD/CP VA
Red emergency stop switch	Manual Switch		SD VA
Failure to crank	Corps of Engrs. Required		
Integral Main Fuel Tank low fuel limit Device/Condition/indication (70% volume remaining)	Corps of Engrs. Required		
Alarms			
Low lube-oil pressure	Pressure/level	CP VAO	CP VA
Low fuel level	Main tank, 3 hours remaining	CP VAO	
High fuel level	Integral Main Fuel Storage Tank 95% Volume		CP VA
Low coolant	Jacket water	CP VA	
Pre-high temperature	Jacket water/cylinder	CP VAO	CP VA
Pre-low lube-oil pressure			CP VA
Low coolant level		SD/CP VA	

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High battery voltage	CP VAO
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Low battery voltage	CP VAO
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Battery charger AC failure	AC supply not available	CP VAO
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Control switch not in AUTO	CP VAO
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Low starting air pressure	CP VAO
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Low starting hydraulic pressure	CP VAO
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SD - Shut Down
CP - On Control Panel
VA - Visual Alarm
AA - Audible Alarm
O - Optional

2.16.5 Time-Delay on Alarms

For startup of the engine-generator set, time-delay devices shall be installed bypassing the low lubricating oil pressure alarm during cranking, and the coolant-fluid outlet temperature alarm. The lube-oil time-delay device shall return its alarm to normal status after the engine starts. The coolant time-delay device shall return its alarm to normal status 5 minutes after the engine starts.

2.16.6 Remote Alarm Panel

A remote alarm panel (located in electrical room) shall be provided as follows:

Device/Condition/ Function	What/Where/Size	NFPA 110 Level 2
Remote annunciator panel	Battery powered	
Loads on genset		
Battery charger malfunction		
Low lube-oil	Pressure/level	AAO
Low Temperature	Jacket water	AAO
High Temperature	Jacket water/ cylinder	AAO

Low fuel level	Main tank, 3 hr remaining	AAO
Overcrank	Failure to start	AAO
Overspeed		AAO
Pre-high temperature	Jacket water/ cylinder	
Control switch not in AUTO		
Common alarm contacts for local & remote common alarm		X
Audible alarm silencing switch		O
Air shutdown damper	When used	AAO
Common fault alarm		AA
X - Required		
SD - Shut Down		
CP - On Control Panel		
VA - Visual Alarm		
AA - Audible Alarm		
O - Optional		

2.17 ENGINE GENERATOR SET CONTROLS AND INSTRUMENTATION

Devices, wiring, remote panels, local panels, etc., shall be provided and installed as a complete system to automatically activate the appropriate signals and initiate the appropriate actions.

2.17.1 Controls

A local control panel shall be provided with controls in accordance with NFPA 110 level 2 and as follows mounted either on or adjacent to the engine generator set. A remote control panel shall be provided with devices as indicated.

Device/Condition/ Function	Corps Requirement	NFPA 110 Level 2
Controls		
Switch: run/start - off/set - auto	CP	
Emergency stop switch & alarm	CP	
Lamp test/indicator test	CP	CP VA
Common alarm contacts/		X

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fault relay

Panel lighting	CP
Audible alarm & silencing/reset switch	CP

Voltage adjust for voltage Regulator	CP
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Pyrometer display w/selector switch	CP
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Remote emergency stop switch	CP VA
Remote fuel shutoff switch	
Remote lube-oil shutoff switch	

2.17.2 Engine Generator Set Metering and Status Indication

A local panel shall be provided with devices in accordance with NFPA 110 level 2 and as follows mounted either on or adjacent to the engine generator set. A remote control panel shall be provided with devices as indicated.

Device/Condition/ Function	Corps Requirement	NFPA 110 Level 2
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Genset Status & Metering

Genset supplying load	CP VAO
-----------------------	--------

System ready

Engine oil pressure	CP
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Engine coolant temperature	CP
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Engine RPM (Tachometer)	CP
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Engine run hours	CP
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Pyrometer display w/selector switch	CP
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AC volts (generator), 3-phase	CP
----------------------------------	----

AC amps (generator), 3-phase	CP
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Generator frequency	CP
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Phase selector switches (amps & volts)	CP
---	----

Watts/kW

Voltage Regulator Adjustment	CP
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CP - On Control Panel
VA - Visual Alarm
AA - Audible Alarm
O - Optional
STD - Manufacturers Standard Offering

2.18 PANELS

Each panel shall be of the type necessary to provide specified functions. Panels shall be mounted in the engine generator enclosure (mounted on wall) by vibration/shock absorbing type mountings. Instruments shall be mounted flush or semiflush. Convenient access to the back of instruments shall be provided to facilitate maintenance. Instruments shall be calibrated using recognized industry calibration standards. Each panel shall be provided with a panel identification plate which clearly identifies the panel function as indicated. Each instrument and device on the panel shall be provided with a plate which clearly identifies the device and its function as indicated. Panels except the remote alarm panel can be combined into a single panel.

2.18.1 Enclosures

Enclosures shall be designed for the application and environment, conforming to NEMA ICS 6.

2.18.2 Analog

Analog electrical indicating instruments shall be in accordance with ANSI C39.1 with semiflush mounting. Switchgear, and control-room panel-mounted instruments shall have 250 degree scales with an accuracy of not less than 1 percent. Unit-mounted instruments shall be the manufacturer's standard with an accuracy of not less than 2 percent. The instrument's operating temperature range shall be minus 20 to plus 65 degrees C. Distorted generator output voltage waveform of a crest factor less than 5 shall not affect metering accuracy for phase voltages, hertz and amps.

2.18.3 Electronic

Electronic indicating instruments shall be true RMS indicating, 100 percent solid state, microprocessor controlled to provide all specified functions. Control, logic, and function devices shall be compatible as a system, sealed, dust and water tight, and shall utilize modular components with metal housings and digital instrumentation. An interface module shall be provided to decode serial link data from the electronic panel and translate alarm, fault and status conditions to set of relay contacts. Instrument accuracy shall be not less than 2 percent for unit mounted devices and 1 percent for control room, panel mounted devices, throughout a temperature range of minus 20 to plus 65 degrees C. Data display shall utilize LED or back lit LCD. Additionally, the display shall provide indication of cycle programming and diagnostic codes for troubleshooting. Numeral height shall be 1/2 inch (13 mm).

2.18.4 Parameter Display

Indication or readouts of the lubricating-oil pressure, ac voltmeter, ac ammeter, frequency meter, and coolant temperature.

2.18.5 Exerciser

The exerciser shall be in accordance with Section 16410A AUTOMATIC TRANSFER SWITCH. Provide warning signs inside generator enclosure stating: "Warning, Engine Generator Can Start Automatically".

2.19 SURGE PROTECTION

Electrical and electronic components shall be protected from, or designed to withstand the effects of surges from switching and lightning.

2.20 AUTOMATIC ENGINE-GENERATOR-SET SYSTEM OPERATION

Fully automatic operation shall be provided for the following operations: engine-generator set starting and source transfer upon loss of preferred source; retransfer upon restoration of the preferred source; sequential starting; and stopping of each engine-generator set after cool down. Devices shall automatically reset after termination of their function.

2.20.1 Automatic Transfer Switch

Automatic transfer switches shall be in accordance with Section 16410A AUTOMATIC TRANSFER SWITCH AND BY-PASS/ISOLATION SWITCH.

2.20.2 Monitoring and Transfer

Devices shall be provided to monitor voltage and frequency for the preferred power source and each engine generator set, and control transfer from the preferred source and retransfer upon restoration of the preferred source. Functions, actuation, and time delays shall be as described in Section 16410A AUTOMATIC TRANSFER SWITCH.

2.21 MANUAL ENGINE-GENERATOR SET SYSTEM OPERATION

Complete facilities shall be provided for manual starting and testing of each set without load, loading and unloading of each set.

2.22 BASE

The base shall be constructed of steel. The base shall be designed to rigidly support the engine-generator set, ensure permanent alignment of all rotating parts, be arranged to provide easy access to allow changing of lube-oil, and ensure that alignment will be maintained during shipping and normal operation. The base shall permit skidding in any direction during installation and shall be provided with suitable holes for foundation bolts. The base shall also withstand and mitigate the effects of synchronous vibration of the engine and generator, and shall be provided with suitable holes for anchor bolts and jacking screws for leveling.

2.23 THERMAL INSULATION

Thermal insulation shall be as specified in Section 15080A THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.24 PAINTING AND FINISHING

The engine-generator set shall be cleaned, primed and painted in accordance with the manufacturer's standard color and practice.

2.25 FACTORY INSPECTION AND TESTS

Factory inspection and tests shall be performed on each engine-generator set proposed to meet this specification section. Inspections shall be completed and necessary repairs made prior to testing. Inspectors shall look for leaks, looseness, defects in components, and proper assembly. Factory tests shall be NEMA MG 1 routine tests and the manufacturers routine tests.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

Installation shall provide clear space for operation and maintenance in accordance with NFPA 70 and IEEE C2. Installation of pipe, duct, conduit, and ancillary equipment shall be configured to facilitate easy removal and replacement of major components and parts of the engine-generator set.

3.2 PIPING INSTALLATION

3.2.1 General

Piping shall be welded. Connections at valves shall be flanged. Connections at equipment shall be flanged except that connections to the diesel engine may be threaded if the diesel-engine manufacturer's standard connection is threaded. Except as otherwise specified, flanged fittings shall be utilized to allow for complete dismantling and removal of each piping system from the facility without disconnecting or removing any portion of any other system's equipment or piping. Connections to all equipment shall be made with flexible connectors. Pipes extending through the roof shall be properly flashed. Piping shall be installed clear of windows, doors, and openings to permit thermal expansion and contraction without damage to joints or hangers, and with a 1/2 inch (15 mm) drain valve at each low point.

3.2.2 Supports

Hangers, inserts, and supports shall be of sufficient size to accommodate any insulation and shall conform to MSS SP-58 and MSS SP-69. Supports shall be spaced not more than 7 feet (2.1 m) on center for pipes 2 inches (50 mm) in diameter or less, not more than 12 feet (3.6 m) on center for pipes larger than 2 inches (50 mm) but no larger than 4 inches (100 mm), and not more than 17 feet (5.2 m) on center for pipes larger than 4 inches (100 mm) in diameter. Supports shall be provided at pipe bends or change of direction.

3.2.2.1 Ceiling and Roof

Exhaust piping shall be supported with appropriately sized type 41 single pipe roll and threaded rods; all other piping shall be supported with appropriately sized type 1 clevis and threaded rods.

3.2.2.2 Wall

Wall supports for pipe shall be made by suspending the pipe from appropriately sized type 33 brackets with the appropriate ceiling and roof pipe supports.

3.2.3 Flanged Joints

Flanges shall be 125 pound (Class 125) type, drilled, and of the proper size and configuration to match equipment and diesel-engine connections. Gaskets shall be factory cut in one piece 1/16 inch (1.6 mm) thick.

3.2.4 Cleaning

After fabrication and before assembly, piping interiors shall be manually wiped clean of all debris.

3.2.5 Pipe Sleeves

Pipes passing through construction such as ceilings, floors, or walls shall be fitted with sleeves. Each sleeve shall extend through and be securely fastened in its respective structure and shall be cut flush with each surface. The structure shall be built tightly to the sleeve. The inside diameter of each sleeve shall be 1/2 inch (15 mm), and where pipes pass through combustible materials, 1 inch (25 mm) larger than the outside diameter of the passing pipe or pipe covering.

3.3 ELECTRICAL INSTALLATION

Electrical installation shall comply with NFPA 70, IEEE C2, and Section 16415A ELECTRICAL WORK, INTERIOR.

3.3.1 Vibration Isolation

Flexible fittings shall be provided for all conduit, cable trays, and raceways attached to engine-generator sets. Metallic conductor cables installed on the engine generator set and from the engine generator set to equipment not mounted on the engine generator set shall be flexible stranded conductor. Terminations of conductors on the engine generator set shall be crimp-type terminals or lugs.

3.4 FIELD PAINTING

Field painting shall be as specified in Section 09900 PAINTS AND COATINGS.

3.5 ONSITE INSPECTION AND TESTS

3.5.1 Test Conditions

3.5.1.1 Data

Measurements shall be made and recorded of parameters necessary to verify that each set meets specified parameters. If the results of any test step are not satisfactory, adjustments or replacements shall be made and the step repeated until satisfactory results are obtained. Unless otherwise indicated, data shall be taken during engine-generator set operation and recorded in 15 minute intervals and shall include: readings of engine-

generator set meters and gauges for electrical and power parameters; oil pressure; ambient temperature; and engine temperatures available from meters and gauges supplied as permanent equipment on the engine-generator set. In the following tests where measurements are to be recorded after stabilization of an engine-generator set parameter (voltage, frequency, current, temperature, etc.), stabilization is considered to have occurred when measurements are maintained within the specified bandwidths or tolerances, for a minimum of four consecutive readings. Electrical measurements shall be performed in accordance with IEEE Std 120. Definitions and terms are in accordance with IEEE Std 100. Temperature limits in the rating of electrical equipment and for the evaluation of electrical insulation shall be in accordance with IEEE Std 1.

3.5.1.2 Power Factor

Engine-generator set operating tests shall be made utilizing a load with the power factor specified in the engine generator set parameter schedule.

3.5.1.3 Contractor Supplied Items

The Contractor shall provide all equipment and supplies required for inspections and tests including fuel, test instruments, and loadbanks at the specified power factors.

3.5.1.4 Instruments

Readings of panel gauges, meters, displays, and instruments, provided under this specification shall be verified during test runs by test instruments of precision and accuracy greater than the tested items. Test instrument accuracy shall be at least as follows: current, 1.5%; voltage, 1.5%; real power, 1.5%; reactive power, 1.5%; power factor, 3%; frequency, 0.5%. Test instruments shall be calibrated by a recognized standards laboratory within 90 days prior to testing.

3.5.1.5 Sequence

The sequence of testing shall be as specified in the approved testing plan unless variance is authorized by the Contracting Officer. Field testing shall be performed in the presence of the Contracting Officer. Tests may be scheduled and sequenced in order to optimize run-time periods; however the following general order of testing shall be followed: Construction Tests; Inspections; Safety run Tests; and Performance Tests and Final Inspection.

3.5.2 Construction Tests

Individual component and equipment functional tests for fuel piping, coolant piping, and lubricating-oil piping, electrical circuit continuity, insulation resistance, circuit protective devices, and equipment not provided by the engine-generator set manufacturer shall be performed prior to connection to the engine-generator set.

3.5.2.1 Piping Test

- a. Lube-oil and fuel-oil piping shall be flushed with the same type of fluid intended to flow through the piping, until the outflowing fluid has no obvious sediment or emulsion.

- b. Fuel piping which is external to the engine-generator set shall be tested in accordance with NFPA 30. All remaining piping which is external to the engine generator set shall be pressure tested with air pressure at 150% of the maximum anticipated working pressure, but in no case less than 150 psig (1 MPa), for a period of 2 hours to prove the piping has no leaks. If piping is to be insulated, the test shall be performed before the insulation is applied.

3.5.2.2 Electrical Equipment Tests

- a. Low-voltage cable insulation integrity tests shall be performed for cables connecting the generator breaker to the automatic transfer switch, panelboard, main disconnect switch, and distribution bus. Low-voltage cable, complete with splices, shall be tested for insulation resistance after the cables are installed, in their final configuration, ready for connection to the equipment, and prior to energization. The test voltage shall be 500 volts dc, applied for one minute between each conductor and ground and between all possible combinations conductors in the same trench, duct, or cable, with all other conductors in the same trench, duct, or conduit. The minimum value of insulation shall be:

$R \text{ in megohms} = (\text{rated voltage in kV} + 1) \times 304,800 / (\text{length of cable in meters})$.

$(R \text{ in megohms} = (\text{rated voltage in kV} + 1) \times 1000 / (\text{length of cable in feet}))$

Each cable failing this test shall be repaired or replaced. The repaired cable shall be retested until failures have been eliminated.

- b. Medium-voltage cable insulation integrity tests shall be performed for cables connecting the generator breaker to the generator switchgear, main disconnect switch, and distribution bus. After insulation and before the operating test or connection to an existing system, the medium-voltage cable system shall be given a high potential test. Direct-current voltage shall be applied on each phase conductor of the system by connecting conductors as one terminal and connecting grounds or metallic shieldings or sheaths of the cable as the other terminal for each test. Prior to making the test, the cables shall be isolated by opening applicable protective devices and disconnecting equipment. The test shall be conducted with all splices, connectors, and terminations in place. The method, voltage, length of time, and other characteristics of the test for initial installation shall be in accordance with NEMA WC 74 for the particular type of cable installed, except that 28kV and 35kV insulation test voltages shall be in accordance with either AEIC CS5 or AEIC CS6 as applicable, and shall not exceed the recommendations of IEEE Std 404 for cable joints and IEEE Std 48 for cable terminations unless the cable and accessory manufacturers indicate higher voltages are acceptable for testing. Should any cable fail due to a weakness of conductor insulation or due to defects or injuries incidental to the installation or because of improper installation of cable, cable joints, terminations, or other connections, the contractor shall make necessary repairs or

replace cables as directed. Repaired or replaced cables shall be retested.

- c. Circuit breakers and switchgear shall be examined and tested in accordance with manufacturer's published instructions for functional testing.

3.5.3 Inspections

The following inspections shall be performed jointly by the Contracting Officer and the Contractor, after complete installation of each engine-generator set and its associated equipment, and prior to startup of the engine-generator set. Checks applicable to the installation shall be performed. The results of those which are physical inspections (I) shall be documented by the Contractor and submitted in accordance with paragraph SUBMITTALS. The Contractor shall present manufacturer's data for the inspections designated (D) at the time of inspection. Inspections shall verify that equipment type, features, accessibility, installation and condition are in accordance with the contract specification. Manufacturer's statements shall certify provision of features which cannot be verified visually.

1. Drive belts. (I)
2. Governor type and features. (I)
3. Engine timing mark. (I)
4. Starting motor. (I)
5. Starting aids. (I)
6. Coolant type and concentration. (D)
7. Radiator drains. (I)
8. Block coolant drains. (I)
9. Coolant fill level. (I)
10. Coolant line connections. (I)
11. Coolant hoses. (I)
12. Combustion air filter. (I)
13. Intake air silencer. (I)
14. Lube oil type. (D)
15. Lube oil drain. (I)
16. Lube-oil filter. (I)
17. Lube-oil-fill level. (I)
18. Lube-oil line connections. (I)
19. Lube-oil lines. (I)
20. Fuel type. (D)
21. Fuel-level. (I)
22. Fuel-line connections. (I)
23. Fuel lines. (I)
24. Fuel filter. (I)
25. Access for maintenance. (I)
26. Voltage regulator. (I)
27. Battery-charger connections. (I)
28. Wiring & terminations. (I)
29. Instrumentation. (I)
30. Hazards to personnel. (I)
31. Base. (I)
32. Nameplates. (I)
33. Paint. (I)
34. Exhaust system. (I)
35. Access provided to controls. (I)

- 36. Enclosure. (I)
- 37. Engine & generator mounting bolts (proper application). (I)

3.5.4 Safety Run Tests

- a. Perform and record engine manufacturer's recommended prestarting checks and inspections.
- b. Start the engine, record the starting time, make and record engine manufacturer's after-starting checks and inspections during a reasonable warm-up period.
- c. Activate the manual emergency stop switch and verify that the engine stops.
- d. Remove the high and pre-high lubricating oil temperature sensing elements from the engine and temporarily install temperature gauge in their normal locations on the engine (required for safety, not for recorded data). Where necessary, provide temporary wiring harness to connect the sensing elements to their permanent electrical leads.
- e. Start the engine, record the starting time, make and record engine manufacturer's after-starting checks and inspections and operate the engine generator-set at no load until the output voltage and frequency stabilize. Monitor the temporarily installed temperature gauges. If temperature reading exceeds the value for an alarm condition, activate the manual emergency stop switch.
- f. Immerse the elements in a vessel containing controlled-temperature hot oil and record the temperature at which the pre-high alarm activates and the temperature at which the engine shuts down. Remove the temporary temperature gauges and reinstall the temperature sensors on the engine.
- g. Remove the high and pre-high coolant temperature sensing elements from the engine and temporarily seal their normal location on the engine and temporarily install temperature gauges in their normal locations on the engine (required for safety, not for recorded data). Where necessary provide temporary wiring harness to connect the sensing elements to their permanent electrical leads.
- h. Start the engine, record the starting time, make and record engine manufacturer's after-starting checks and inspections and operate the engine generator-set at no load until the output voltage and frequency stabilize.
- i. Immerse the elements in a vessel containing controlled-temperature hot oil and record the temperature at which the pre-high alarm activates and the temperature at which the engine shuts down. Remove the temporary temperature gauges and reinstall the temperature sensors on the engine.
- j. Start the engine, record the starting time, make and record engine manufacturer's after-starting checks and inspections during a reasonable warm-up period.

- k. Operate the engine generator-set for at least 30 minutes at 100 percent of service load.
- l. Verify proper operation of the governor and voltage regulator.
- m. Verify proper operation and setpoints of gauges and instruments.
- n. Verify proper operation of ancillary equipment.
- o. Manually adjust the governor to increase engine speed past the overspeed limit. Record the RPM at which the engine shuts down.
- p. Start the engine, record the starting time, make and record engine manufacturer's after-starting checks and inspections and operate the engine generator-set for at least 15 minutes at 75 percent of rated load.
- q. Manually fill the day tank to a level above the overfill limit. Record the level at which the overfill alarm sounds. Verify shutdown of the fuel transfer pump. Drain the day tank down below the overfill limit.
- r. Shut down the engine. Remove the time-delay low lube oil pressure alarm bypass and try to start the engine. Record the results.
- s. Attach a manifold to the engine oil system (at the oil sensor pressure port) that contains a shutoff valve in series with a connection for the engine's oil pressure sensor followed by an oil pressure gauge ending with a bleed valve. The engine's oil pressure sensor shall be moved from the engine to the manifold and its normal location on the engine temporarily sealed. The manifold shutoff valve shall be open and bleed valve closed.
- t. Start the engine, record the starting time, make and record all engine manufacturer's after-starting checks and inspections and operate the engine generator-set for at least 15 minutes at 75 percent of service load.
- u. Close the manifold shutoff valve. Slowly allow the pressure in the manifold to bleed off through the bleed valve while watching the pressure gauge. Record the pressure at which the engine shuts down. Catch oil spillage from the bleed valve in a container. Add the oil from the container back to the engine, remove the manifold, and reinstall the engine's oil pressure sensor on the engine.
- v. Start the engine, record the starting time, make and record all engine manufacturer's after-starting checks and inspections and operate the engine generator-set for at least 15 minutes at 100% of service load. Record the maximum sound level in each frequency band at a distance of 75 feet (22.9 m) from the end of the exhaust and air intake piping directly along the path of intake and discharge horizontal piping; or at a radius of 75 feet (22.9 m) from the engine at 45 degrees apart in all directions for vertical piping. The measurements should comply with the paragraph SOUND LIMITATIONS. If a sound limiting enclosure is provided, the enclosure, the muffler, and intake silencer shall be modified or

replaced as required to meet the sound requirements contained within this specification.

3.5.5 Performance Tests

3.5.5.1 Continuous Engine Load Run Test

The engine-generator set and ancillary systems shall be tested at service load to: demonstrate durability; verify that heat of extended operation does not adversely affect or cause failure in any part of the system; and check all parts of the system. If the engine load run test is interrupted for any reason, the entire test shall be repeated. The engine load run test shall be accomplished principally during daylight hours, with an average ambient temperature of 86 degrees F (30 degrees C), during the month of August, or as directed by the Contracting Officer. After each change in load in the following test, measure the vibration at the end bearings (front and back of engine, outboard end of generator) in the horizontal, vertical, and axial directions. Verify that the vibration is within the allowable range. Measurements are to be recorded after stabilization of an engine-generator set parameter (voltage, frequency, current, temperature, etc.). Stabilization is considered to have occurred when measurements are maintained within the specified bandwidths or tolerances, for a minimum of four consecutive readings. Data taken at 15 minutes intervals shall include the following:

a. Electrical: Output amperes, voltage, real and reactive power, power factor, frequency.

b. Pressure: Lube-oil.

c. Temperature: Coolant.
Lube-oil.
Ambient.

(1) Perform and record engine manufacturer's recommended prestarting checks and inspections. Include as a minimum checking of coolant fluid, fuel, and lube-oil levels.

(2) Start the engine; make and record engine manufacturer's after-starting checks and inspections during a reasonable warm-up period.

(3) Operate the engine generator-set for at least 2 hours at 75 percent of service load.

(4) Increase load to 100% of service load and operate the engine generator-set for at least 2 hours.

(5) Remove load from the engine-generator set.

3.5.5.2 Load Acceptance Test

Engine manufacturer's recommended prestarting checks and inspections shall be performed and recorded. The engine shall be started, and engine manufacturer's after-starting checks and inspections made and recorded during a reasonable warm-up period. For the following steps, the output line-line and line-neutral voltages and frequency shall be recorded after performing each step instruction (after stabilization of voltage and

frequency). Stabilization is considered to have occurred when measurements are maintained within the specified bandwidths or tolerances, for a minimum of four consecutive readings.

- a. Apply load in steps no larger than the Maximum Step Load Increase to load the engine-generator set to 100 of Service Load.
- b. Verify that the engine-generator set responds to the load addition and that the output voltage returns to and stabilizes within the rated bandwidths.

3.5.6 Automatic Operation Tests for Stand-Alone Operation

The automatic loading system shall be tested to demonstrate automatic starting, of the engine-generator set. The loads for this test shall utilize the actual loads to be served, and the loading sequence shall be the indicated sequence. Perform this test for a minimum of two successive, successful tests. Data taken shall include the following:

- a. Ambient temperature (at 15 minute intervals).
- b. Generator output current (before and after load changes).
- c. Generator output voltage (before and after load changes).
- d. Generator output frequency (before and after load changes.)
 1. Initiate loss of the primary power source and verify automatic sequence of operation.
 2. Restore the primary power source and verify sequence of operation.
 3. Verify resetting of controls to normal.

3.6 FINAL INSPECTION AND TESTING

- a. Start the engine, record the starting time, make and record all engine manufacturer's after-starting checks and inspections during a reasonable warm-up period.
- b. Increase the load in steps no greater than the maximum step load increase to 100% of service load, and operate the engine-generator set for at least 30 minutes. Measure the vibration at the end bearings (front and back of engine, outboard end of generator) in the horizontal, vertical, and axial directions. Verify that the vibration is within the same range as previous measurements and is within the required range.
- c. Remove load and shut down the engine-generator set after the recommended cool down period. Perform the pre-test inspections and take necessary corrective actions.
- d. Remove the lube oil filter and have the oil and filter examined by the engine manufacturer for excessive metal, abrasive foreign particles, etc. Any corrective action shall be verified for

effectiveness by running the engine for 4 hours at service load, then re-examining the oil and filter.

- e. Remove the fuel filter and examine the filter for trash, abrasive foreign particles, etc.
- f. Visually inspect and check engine and generator mounting bolts for tightness and visible damage.
- g. Replace air, oil, and fuel filters with new filters.

3.7 MANUFACTURER'S FIELD SERVICE

3.7.1 Onsite Training

The Contractor shall conduct training course for operating staff as designated by the Contracting Officer. The training period shall consist of a total 4 hours of normal working time and shall start after the system is functionally completed but prior to final acceptance. The course instructions shall cover pertinent points involved in operating, starting, stopping, servicing the equipment, as well as all major elements of the operation and maintenance manuals. Additionally, the course instructions shall demonstrate all routine maintenance operations such as oil change, oil filter change, and air filter change.

3.7.2 Manufacturer's Representative

The engine generator-set manufacturer shall furnish a qualified representative to supervise the installation of the engine generator-set, assist in the performance of the onsite tests, and instruct personnel as to the operational and maintenance features of the equipment.

3.8 INSTRUCTIONS

Two sets of instructions shall be typed and framed under laminated plastic, and posted side-by-side on interior wall of enclosure where directed before acceptance. First set of instructions shall include a one-line diagram, wiring and control diagrams and a complete layout of the system. Second set of instructions shall include the condensed operating instructions describing manufacturer's pre-start checklist and precautions; start procedures for test-mode, manual-start mode, and automatic-start mode (as applicable); running checks, procedures, and precautions; and shutdown procedures, checks, and precautions. Instructions shall include procedures for interrelated equipment (such as automatic transfer switches).

3.9 ACCEPTANCE

Final acceptance of the engine-generator set will not be given until the Contractor has successfully completed all tests and after all defects in installation material or operation have been corrected.

End of Section

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